DRAFT
Environmental Assessment,
Finding of No Significant Impact,
and Clean Water Act Section 404(b)(1) Evaluation

Bucks Harbor
Machiasport, Maine
Navigation Improvement

US ARMY CORPS
OF ENGINEERS
New England District

June 2008

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ENVIRONMENTAL ASSESSMENT
FINDING OF NO SIGNIFICANT IMPACT
AND
CLEAN WATER ACT 404 (b)(1) EVALUATION

BUCKS HARBOR
MACHIASPORT, MAINE
NAVIGATION IMPROVEMENT

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1.0 INTRODUCTION

The purpose of this Environmental Assessment (EA) is to present information on the environmental features of the project area and to review design information to determine the potential impacts of the proposed Bucks Harbor navigation improvement project. This Environmental Assessment describes project compliance with the National Environmental Policy Act of 1969 (NEPA) and all appropriate Federal and State environmental regulations, laws, and executive orders. Methods used to evaluate the environmental resources of the area include biological sampling, sediment analysis, review of available information, and coordination with appropriate environmental agencies and knowledgeable persons. This report provides an assessment of environmental impacts and alternatives considered along with other data applicable to the Clean Water Act Section 404(b)1 Evaluation requirements.

1.1 PURPOSE, NEED, AND AUTHORITY

Bucks Harbor is located in the town of Machiasport, Maine on the west coast of Machias Bay (Figure 1). The harbor lies 70 miles east of Ellsworth, Maine and is situated along U.S. Route 1, about 25 miles west of Lubec, Maine and the Canadian border. The purpose of the proposed navigation improvement project is to deepen the anchorage area and channel. The location of the project is shown in Figure 2. The harbor is bordered by mainland to the south and west, and by mudflats, mainland, and Bar Island to the north. Access to Machias Bay is from the east. According to recent condition surveys, Bucks Harbor experiences a mean tidal range of 12.5 feet, and a spring tidal range of 14.4 feet. Depths in the harbor gradually deepen from about five feet in the inner harbor to 30 feet at the entrance to Machias Bay. The navigation problems created by these conditions are as follows: overcrowding due to a lack of deep water anchorage, no clear access channel as the area originally provided for a fairway has been consumed by moorings due to a great demand, and exposure to hazardous storm conditions entering the harbor from Machias Bay. The dredging of approximately 88,300 cubic yards (34,500 cy for maintenance and 53,800 cy for improvement) of material is required to provide sufficient deep water mooring space for the expanding commercial fishing fleet, reduce damages, congestion related delays and tidal delays currently experienced by the fleet. The recommended plan would create approximately 13.5 acres of 6-foot anchorage, 9.6 acres of 8-foot anchorage, 1.0 acres of turning basin, and an 80 foot wide by 8 foot deep access channel along the south side of the harbor (2.1 acres).

Bucks Harbor is used mainly for commercial purposes. It supports a large commercial fleet of over 90 vessels (including floats, lobster cars and salmon barges) as well as several recreational vessels. Transient boats also utilize the harbor and fishing pier. There are no rental slips or onshore facilities servicing recreational boaters in the harbor. When the navigational improvement project is accomplished, the existing fleet will experience a much greater operating efficiency, making them more competitive. The project would ease navigational access and anchorage, and provide a safe mooring for boats during storms.

The Town of Machiasport, Maine requested that the Corp of Engineers conduct an

investigation on the feasibility of Federal involvement in providing navigation improvements, specifically, additional deep water anchorage and storm protection for the commercial fishing fleet based in Bucks Harbor. The investigation of Bucks Harbor was conducted under the continuing authority of Section 107 of the River and Harbor Act of 1960, as amended.

In 1972, a Federal navigation project for Bucks Harbor consisting of 11 acres of anchorage dredged to 8 feet below mean low water (MLW) was adopted (see Figure 2). The project was constructed in 1974 and provided approximately 13 acres allowing for a maneuvering fairway for access through the anchorage. No other navigation improvements or maintenance efforts have been implemented since 1974.

Although improvement to the existing navigation project is beyond the Town's means, the Town has improved and expanded its shoreline access and support facilities for the commercial fishing operations. In 1986 the town of Machiasport, with funding received from the state of Maine, engaged the services of an engineering consulting firm to assist in developing a harbor management plan including onshore services, vessel mooring and storm protection. The report presented plans for onshore improvements related to commercial fishing interests, and anchorage and breakwater designs. The town also received a Coastal Zone Management (CZM) grant in November 1988 to study waterfront planning. This included shoreline ordinances and zoning, identification, improvement and/or construction of possible public access points in the harbor for a new public pier and boat ramp.

1.2 PROJECT DESCRIPTION

The recommended plan will expand the existing project from 11.0 acres of 8 foot deep anchorage and 2.0 acres of 8 foot maneuvering area to a total of 13.5 acres of 6-foot anchorage, 20.6 acres of 8-foot anchorage, and an 80 foot wide by 8 foot deep access channel along the south side of the harbor (2.1 acres). Approximately 1.0 acre of turning basin will also be added at the terminus of the channel. The total project size will increase by a total of 24.2 acres. Construction of this improvement project will involve a combination of maintenance and improvement dredging (88,300 cubic yards). The material will be dredged mechanically and placed into scows which will then be towed to the Machias Bay Disposal Site for disposal (see Figure 1).

Dredging and disposal activities will be limited to a period between November 8 and April 9 to avoid impacts to biological resources (fisheries/shellfish).

FIGURE 1. Bucks Harbor (Machiasport, ME) existing Federal Navigation Project (FNP), proposed expansion area, and the Machias Bay Disposal Area.

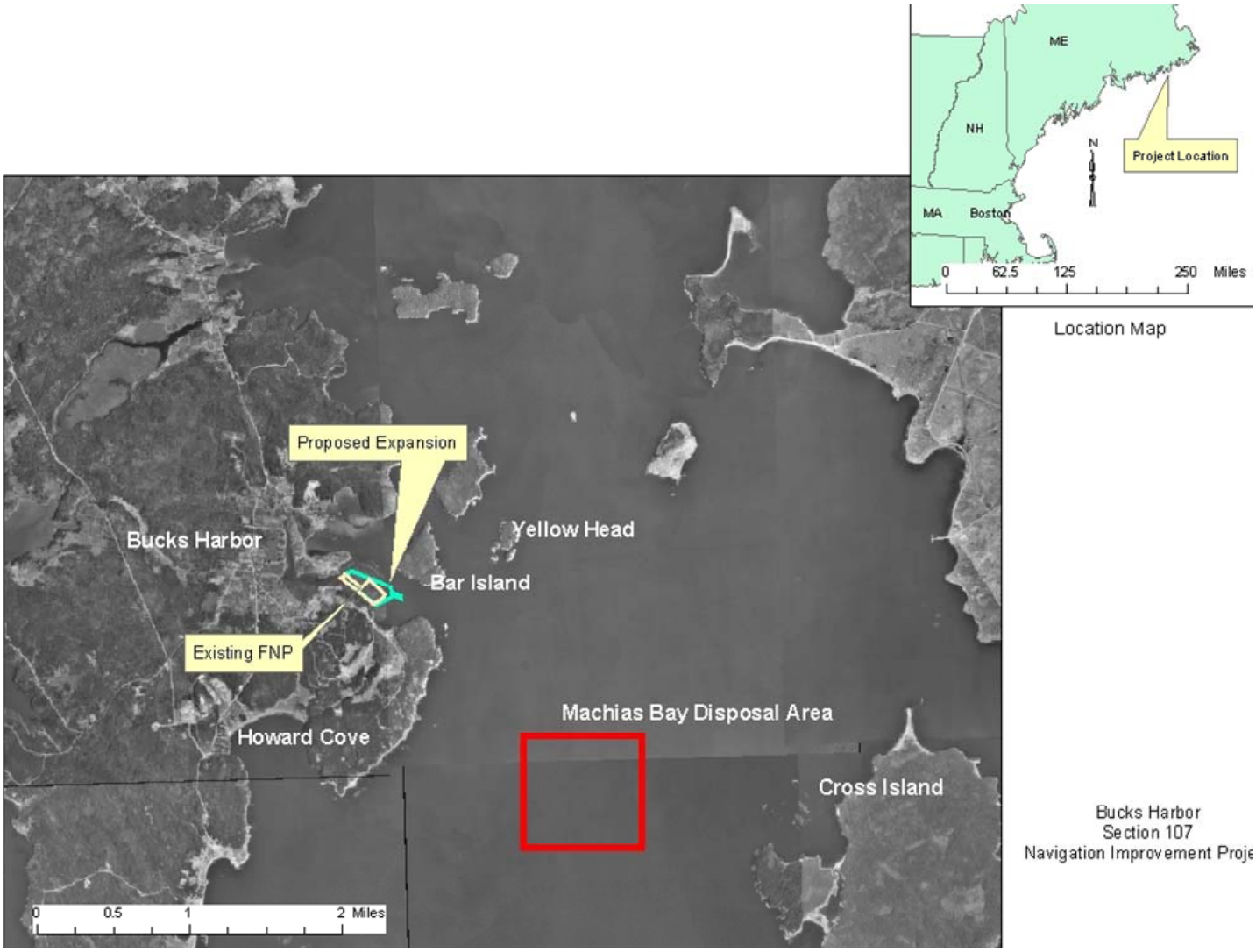
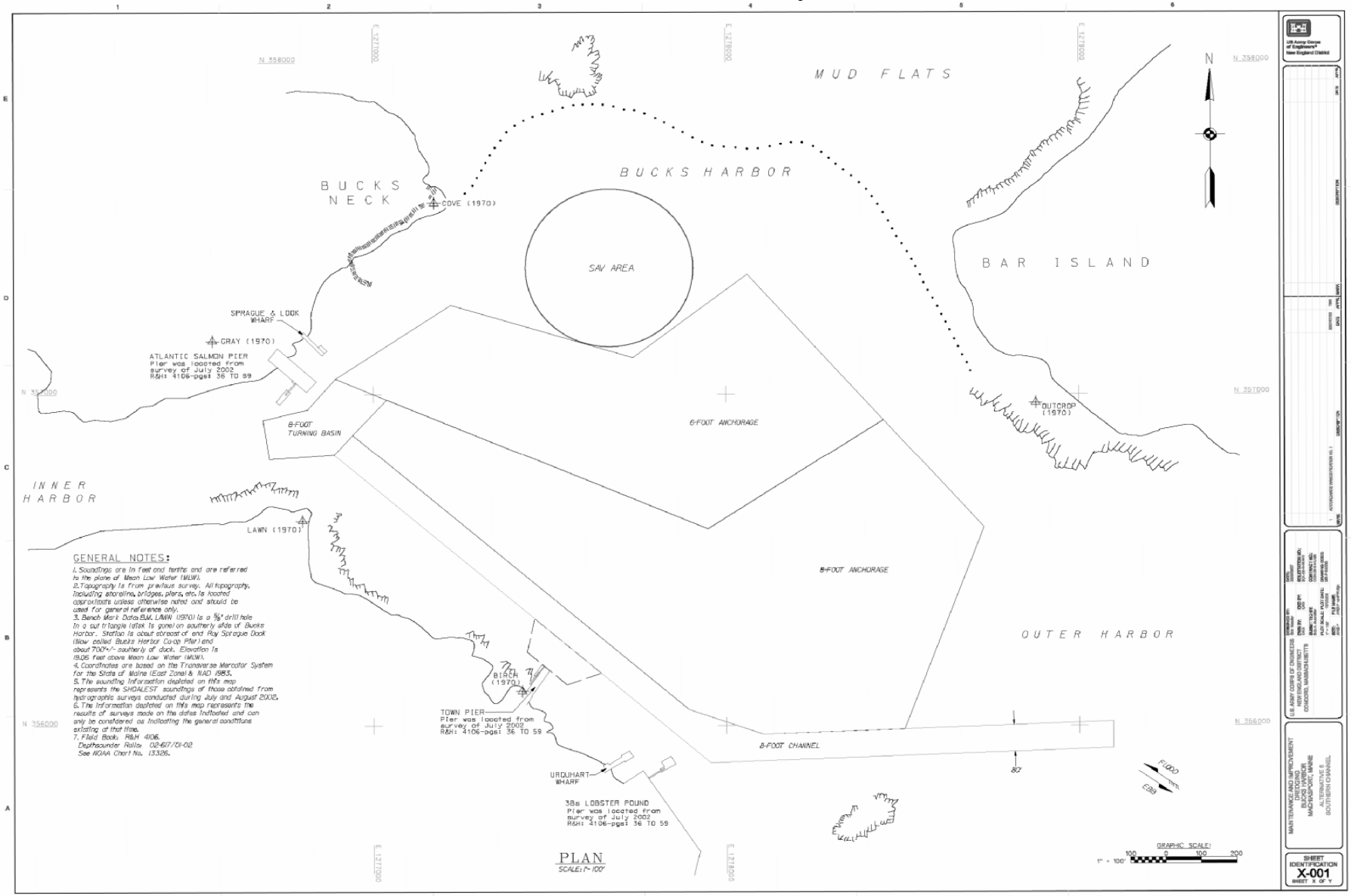


FIGURE 2. Bucks Harbor Project Area.



2.0 ALTERNATIVES

2.1 ACTION ALTERNATIVES

Alternative 1 - No Action

The No Action Alternative, not improving the navigation situation in any way, would result in a continuation of existing difficulties for commercial and recreational vessels in the harbor. Overcrowding in the anchorage areas would persist and the damages to vessel associated with the overcrowding would continue. This option is considered to be unacceptable to the local interests.

Alternative 2 - Fleet Relocation

The relocation of the Bucks Harbor fleet was considered to alleviate overcrowding conditions in the project area. Options available for relocation include moving the fleet to Jonesport or Beals Harbor. The distances from Bucks Harbor are 5 and 10 miles, respectively. This alternative was determined to be unacceptable because of the increased distance to the fishing grounds as well as the lack of space at these harbors to accommodate the additional vessels from Bucks Harbor.

Alternative 3 - Project Expansion

The addition of a designated navigation channel and expanding the anchorage area was considered in order to alleviate overcrowding conditions in the harbor. The following sub-alternatives were included in our analysis. The calculated quantities are based on 1 foot of allowable overdepth dredging and a 1:3 side slope construction. Channel area and quantity calculations also include a 1 acre turning basin at its end.

Alternative 3a Involves creating an additional 13.5 acres of 6' anchorage, 2.1 acres of 8' channel, and 9.6 acres of 8' anchorage in the harbor. This will require the removal of approximately 86,400 cy of material (maintenance and improvement quantities combined).

Alternative 3b Involves creating an additional 23.1 acres of 6-foot anchorage and 2.1 acres of 6-foot channel. This will require the removal of approximately 38,300 cy of material (maintenance and improvement quantities combined).

Alternative 3c Involves creating an additional 23.1 acres of 8-foot anchorage and 2.1 acres of 8-foot channel. This will require the removal of approximately 126,500 cy of material (maintenance and improvement quantities combined).

Alternative 3d Involves creating an additional 23.1 acres of 10-foot anchorage and 2.1 acres of 10-foot channel. This will require the removal of approximately 261,900 cy of material (maintenance and improvement quantities combined).

Alternative 3e This sub-alternative is similar to 3a but in this case the channel is routed along the south side of the harbor rather than through the middle. This will require the removal of approximately 88,300 cy of material (maintenance and improvement

quantities combined).

Alternative 4 - Project Expansion and Breakwater

The addition of the channel, expansion of the anchorage areas, and the creation of a breakwater were also considered in order to alleviate overcrowding conditions in the harbor. The creation of a breakwater would add additional anchorage space in the form of deep water moorings to the project area. Sub-alternatives 3a-3e were considered in conjunction with the following breakwater sub-alternatives:

Alternative 4a Involves the creation of a 415' breakwater to the south and a 575' breakwater to the north (Bar Island). Approximately 13,000 cy and 21,700 cy of stone will be required to construct the two breakwaters, respectively.

Alternative 4b Involves the creation of a 545' breakwater to the north (Bar Island). Approximately 35,200 cy of stone will be required to construct the breakwater.

2.2 ALTERNATIVE DREDGING METHODS

Dredging methods that were considered for this project include hydraulic, hopper, and mechanical dredges. A hydraulic dredge pumps sediments via pipeline to a land or an intertidal disposal area. A hopper dredge uses a cutterhead and pump to suction sediments through an arm into hoppers within the dredge; when the hopper is full the dredge moves to the disposal site and the material is released by opening the hopper doors. A mechanical dredge excavates material with a bucket-type apparatus and deposits it into a scow for transport to the disposal site where it is released through an opening in the bottom of the scow.

A hydraulic dredge is generally used for sandy material that will be disposed of in an upland area or on a nearby beach, or for pumping any type of unconsolidated material in a confined (diked) disposal/dewatering area. As stated previously, a hydraulic dredge pumps sediments via pipeline. Since the material to be dredged from Bucks Harbor is primarily silt and there are no practicable upland disposal sites, the use of a hydraulic dredge and pipeline system is impractical and cannot be used in this project.

A hopper dredge uses a suction pump similar to a hydraulic dredge to loosen and remove material from the bottom. The material is then deposited into hoppers aboard the dredge vessel. When the hoppers are full, the suction arm is raised and secured to the vessel, which then travels to the disposal site and releases or pumps off the material from the hoppers. The dredge then returns to the dredging site to begin another cycle. Hopper dredges come in various sizes from a few hundred cubic yards bin capacity to several thousand yards capacity. In New England, hopper dredges are most often used to remove sandy materials from harbor entrance channels and deposit the material offshore of beaches to nourish littoral bar systems. Hopper dredges are not efficient in the dredging of silty material as silt particles are easily suspended in the slurry and not effectively captured in the hopper. Since the material at Bucks harbor is silt, the hopper dredge was not selected for this project.

Mechanical bucket dredging involves the use of a barge-mounted crane, hoe or cable-arm with a bucket to dig the material from the harbor bottom. Typical dredging buckets come in various sizes from five cubic yards to fifty or more cubic yards. The material is placed in a scow

for transport to the disposal site by tug. For open-water disposal, a split-hull scow is usually used for ease of disposal and to minimize the discharge plume. Material is typically discharged at a dump buoy, or by using preset coordinates monitored by the tug. Mechanical dredging is a slow process, as the time to fill a scow with dredge material is dependent upon the size of the bucket and the speed of the crane. However, mechanical dredging is the most efficient and practical way to remove silty material. Mechanical dredging was selected as the preferred dredging method of the Bucks Harbor improvement project.

2.3 ALTERNATIVE DISPOSAL SITES

Disposal site alternatives for dredging projects include open water disposal, upland disposal, intertidal or shallow water disposal with possible habitat development, and beach disposal.

Open Water Disposal

The nearest Environmental Protection Agency (EPA) approved ocean disposal site to Bucks Harbor is the Rockland Disposal Site (RDS), which is over 50 miles from the project area. RDS covers a 0.25 nmi^2 (0.87 km^2) area of seafloor within West Penobscot Bay and is centered at 44° 07.105' N, 69° 00.269' W (NAD 83). It is located approximately 3.1 nmi (5.7 km) east-southeast of Brewster Point, Glen Cove, Maine. The distance to this disposal site makes its use impracticable.

The material from the 1974 dredging project in Bucks Harbor was disposed of in Machias Bay at the Machias Bay Disposal Site (MADS). The MADS is situated in the central portion of Machias Bay in Washington County between Ellsworth and St. Andrews, Maine. The MADS is a 1230 m x 1230 m area of seafloor, centered at 44^o 37.156'N, 67^o 20.787 W (NAD83). The site is located approximately 2 miles from Bucks Harbor. This disposal site is the preferred disposal site for this project.

Upland Disposal

One potential upland disposal site was identified for this project. The site identified was on private land approximately 8 miles from Bucks Harbor. The use of the identified upland site would require the material to be triple handled as the material would have to be dredged from the harbor, placed in a dewatering area adjacent to the harbor, and placed in trucks to be transported to the disposal area. Although the upland site was identified, no appropriate dewatering areas are available in the project area. Additionally, the distance to the upland site as well as the physical nature of the material prevents the possibility of hydraulically pumping the material to the upland site. Therefore, this disposal option is considered impracticable.

Habitat Development

The mudflats and shallow waters of the harbor and surrounding bays and coves support soft-shelled clams and eelgrass beds that appear to be very productive. Disposal in one of these areas would be environmentally unacceptable because of the adverse impacts that would be caused. Therefore, this option was not selected as the preferred disposal method.

Beach Disposal

Beach nourishment is not a viable alternative for the Bucks Harbor dredge material. The physiography of the area does not include a suitable beach disposal site and, more importantly, the fine-grained nature of the material is not conducive to beach nourishment.

3.0 AFFECTED ENVIRONMENT

3.1 DREDGING SITE (BUCKS HARBOR)

3.1.1 PHYSICAL SETTING

Bucks Harbor is located in the town of Machiasport in north coastal Maine about 70 miles east of Ellsworth (Figure 1). It is formed in a cove of Machias Bay by the mainland, Bucks Neck, and Bar Island leaving openings to the northeast and southeast. The Machias River, East Machias River, and several smaller rivers and streams feed into the harbor. Mean tidal range is 12.6 feet and spring tidal range is 14.4 feet with a mean tide level of 6.3 feet.

Physical habitats of Bucks Harbor are typical of northeast coastal Maine, including: marine deepwater habitat, aquatic bed, unconsolidated sand and cobble-gravel shorelines, mudflats, and rocky shore of exposed bedrock. Uplands of the Bucks Harbor area support broad-leaved deciduous and coniferous forest and wetlands, as well as agricultural land and lawn.
The National Wetlands Inventory (2007) classifies outer Bucks Harbor and the area north of Bucks Neck within the marine system including areas within the subtidal and intertidal subsystems. According to NWI maps the estuarine system begins where the inlet to the Inner Harbor swells to form a basin. Only intertidal flats and emergent wetlands are present according to the classification.

A scarp is present facing the southeast on Bucks Neck north of Sprauge and Look Wharf. Along most of the harbor, shoreline shrub or forest vegetation begins approximately 3 to 4 feet in elevation above high water.

3.1.2 SEDIMENT QUALITY

Sediments from the Bucks Harbor site are predominately find grained consisting of mostly clay and silt (Woods Hole Group, 2004). Sand and coarse materials were a minor component of the sediment composition. Appendix A contains graphical representations of the grain size distributions in the project area.

Sediments were collect for chemical analysis on April 28, 2004 (Woods Hole Group, 2004). Twelve samples were collected and a total of four composite samples were created to undergo physical and chemical analysis. Table 1 contains the chemical data from the four composite samples. All composites were found to contain very low levels of the contaminants of concern as identified in the Bucks Harbor sampling and analysis plan (see Appendix B). The material is not located near any known significant sources of contaminants.

Table 1. Bulk chemistry results from Bucks Harbor, Machiasport, ME sediments collected April 28, 2004.

	(Concentrations in ppm)								(ug/kg)		(%Dry Weight)
	Arsenic	Cadmium	Chromium	Copper	Mercury	Nickel	Lead	Zinc	Total PCBs	PAHs	Total Organic Carbon
A, B, C Composite	5.0	0.11	16	11	0.014	14	11	40	Low*	Low*	.91
D, E, F Composite	6.3	0.12	18	19	0.017	16	15	48	Low*	Low*	1.3
G, H, I Composite	4.5	.11	14	8.7	0.011	11	8.2	32	Low*	Low*	.61
J, K, L Composite	4.4	0.085	13	8.4	0.0095	11	7.4	32	Low*	Low*	.60

*Refer to Appendix A for the specific concentrations of the various PAHs.

3.1.3 WATER QUALITY

The Maine Bureau of Water Quality Control classifies the waters of Bucks Harbor as SB. Class SB waters are suitable for water contact recreation and fishing, for the harvesting and propagation of shellfish, and for fish and wildlife habitat.

3.1.4 AQUATIC RESOURCES

3.1.4.1 Benthos

A community profile of the benthic assemblages in Bucks Harbor is presented in Appendix D. A total of 43 species were reported from the nine stations within the proposed project area. Based on the analysis of a single replicate from each station, it is apparent that the community is dominated by a typical assemblage of opportunistic and transitional stage benthic species. Polychaetes and Oligochaetes were the dominant taxonomic groups in the project area. The dominant polychaete species were the spionid, *Polydora cornuta*; the Cirratulid, *Cirratulus* sp.; and the nephtid, *Nephtys incisa*. An unidentified Oligochaete species was also present in high numbers at all stations samples.

3.1.4.2 Fish

The fish assemblages found in Bucks Harbor are typical of Maine nearshore marine habitats (NOAA, 2005). A full list of managed fishery species can be found in section 3.1.6 of this report. In addition to managed species, a suite of forage species occur in the harbor.

3.1.4.3 Shellfish, Crabs, and Lobster

Shellfish resources, specifically soft-shell clams, are present in the intertidal areas adjacent

to project area. No sampling was done in these areas of the harbor since no dredging is planned in intertidal areas. An assessment of the benthos in the project area revealed a small number of soft-shell clams, however, the densities in the subtidal areas were less than 1 per 0.16 m^2. Beds of blue mussels exist in the inner harbor in the vicinity of the proposed turning basin. However, the beds are outside of the proposed dredging footprint.

Crab and lobster resources in the project area are minimal as the majority of subtidal bottom is silt. A dive survey of the project area for eelgrass (USACE, 2004) noted few crustaceans and crustacean burrows in the area.

3.1.4.4 Submerged Aquatic Vegetation

Eelgrass (*Zostera marina*) is present in Bucks Harbor. The majority of the documented eelgrass beds occur to the north of the project area (Maine GIS, 2007). In 2004, a dive survey was conducted covering eight transects located in the project footprint. Eelgrass was observed adjacent to the northwestern portion of the study area in small dense beds as well as in lone sparse shoots (USACE, 2004) (Attachment F). The proposed project was configured to avoid the eelgrass beds documented in the dive survey of the harbor.

3.1.5 WILDLIFE RESOURCES

3.1.5.1 Waterfowl

The habitat of Bucks Harbor is typical of northeastern Maine, which is described by the U.S. Fish and Wildlife Service (Schettig and Schettig 1980) as excellent habitat for all migrating and wintering waterfowl species of Maine. The high quality of the habitat is due in large part to the large tidal range, which exposes extensive mudflats in the harbor. This supplies excellent habitat for dabbler ducks, particularly black ducks (Schettig and Schettig 1980). Black duck and other dabbling duck feeding habitat in Bucks Harbor is located primarily in the shallower areas of the harbor and north of Bucks Neck. The Fish and Wildlife Service (Schettig and Schettig 1980) classifies the inner harbor and the area north of Bucks Neck as Tidal Flats Important to Waterfowl. The deeper water of the outer harbor provides habitat for diving ducks such as bufflehead, goldeneye and scoters. Scaup and wintering eiders are not common (Schettig and Schettig 1980).

3.1.5.2 Shorebirds

Coastal Maine is most important for shorebirds as a feeding and resting area during migration. In addition, the piping plover and spotted sandpiper breed along the coast and the purple sandpiper is a winter resident. Shorebirds feed in invertebrates on intertidal mudflats and roost on sand, gravel beaches, spits, wetlands, or near shore ledges (Schettig and Schettig 1980).

3.1.6 ESSENTIAL FISH HABITAT

The 1996 amendments to the Magnuson-Stevens Fishery Conservation Management Act strengthen the ability of the National Marine Fisheries Service (NMFS) and the New England Fishery Management Council to protect and conserve the habitat of marine, estuarine, and anadromous finfish, mollusks, and crustaceans. This habitat is termed "essential fish habitat",

and is broadly defined to include "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." Managed species listed for the 10' x 10' square of latitude and longitude which includes both the Bucks Harbor project site and the Machias Bay disposal area are:

Atlantic salmon *Salmo salar* (juveniles, adults), Atlantic cod *Gadus morhua* (eggs, larvae, juveniles, adults), pollock *Pollachius virens* (juveniles), whiting *Merluccius bilinearis* (juveniles, adults), red hake *Urophycis chuss* (juveniles, adults), white hake *Urophycis tenuis* (juveniles, adults), winter flounder *Pleuronectes americanus* (eggs, larvae, juveniles, adults), yellowtail flounder *Pleuronectes ferruginea* (eggs, larvae), windowpane flounder *Scopthalmus aquosus* (eggs, larvae, juveniles, adults), American plaice *Hippoglossoides platessoides* (eggs, larvae, juveniles, adults), ocean pout *Macrozoarces americanus* (eggs, larvae, juveniles, adults), Atlantic halibut *Hippoglossus hippoglossus* (eggs, larvae, juveniles, adults), Atlantic sea scallop *Placopecten magellanicus* (eggs, larvae, juveniles, adults), Atlantic sea herring *Clupea harengus* (eggs, larvae, juveniles, adults), Atlantic mackerel *Scomber scombrus* (adults), and bluefin tuna *Thunnus thynnus* (adults).

3.1.7 THREATENED AND ENDANGERED SPECIES

Coordination with the U.S Fish and Wildlife Service and National Marine Fisheries Service (NMFS) indicates that nesting bald eagles and Atlantic salmon (*Salmo salar*) are present in the project area. The Gulf of Maine Distinct Population Segment (DPS) of Atlantic salmon was listed as a federally endangered DPS in November of 2000. This DPS includes all naturally reproducing remnant populations of Atlantic salmon from the Kennebec River downstream of the former Edwards Dam site northward to the mouth of the St. Croix River.

Additionally, humpback whales (*Megapetera novaengliae*), right whales (*Eubalaena glacialis*), fin whales (*Balaenoptera physalus*), and harbor seals (*Phoca vitulina*) have the potential to occur in the project area.

3.1.8 AIR QUALITY

Portions of the state of Maine are designated as non-attainment zones for ozone (O3). Maine is part of the Northeast Ozone Transport Region which extends northeast from Maryland and includes all six New England states. Non-attainment zones are areas where the National Ambient Air Quality Standards (NAAQS) have not been met. The proposed project is located in Washington County, Maine which is not designated as a non-attainment zone. Nitric oxide (NO), hydrocarbons, oxygen (O2), and sunlight combine to form ozone in the atmosphere. Nitrogen oxides are released during the combustion of fossil fuels.

3.1.9 HISTORIC AND ARCHEOLOGICAL RESOURCES

Europeans settled Machiasport, Maine in 1765. The area was important for its lumber and sawmills during the 18th and 19th centuries. When the timber in the area was exhausted, the residents turned to fishing for their major source of income.

Fort Machias, now known as Fort O'Brien, was an active fort from 1783 to 1812 when it was taken over by the British. The breastworks still remain, overlooking Machias Bay.

During its heyday as a lumber town, in the late 18th and early 19th century, ships loaded the timber at wharves lining the banks of the Machias River in Machiasport. Several structures from this period survive, notably the Gates House, which is now the Machiasport Historical Society (Ruth Page: Personal Communication).

There is evidence of Pre-Contact Native American use of the area. On the east side of the port, local residents have located shell middens, projectile points, and other artifacts (Dana Urquahart: Personal Communication).

There are ten known shipwrecks near Machiasport, Maine, including one in the mudflats north of the existing project area. However, none of these known wrecks or any other known historic or archaeological resources are within the impact area of the proposed Navigation Improvement project in Bucks Harbor.

The evaluated location for improvement dredging presented in this report will have no effect upon any structure or site of historic, architectural, or archaeological significance, as defined by the National Historic Preservation Act of 1966. The Maine Historic Preservation commission is expected to concur with this finding. Letters were sent to both the ME SHPO and all of the Federally Recognized Indian Tribes in Maine dated March 19, 2004. The project was previously coordinated with these entities in 1987 and also in 1988.

3.2 DISPOSAL AREA

3.2.1 PHYSICAL SETTING

The Machias Bay Disposal Site (MADS) is situated in the central portion of Machias Bay in Washington County between Ellsworth and St. Andrews, Maine. The MADS is a 1230 m x 1230 m area of seafloor, centered at 44° 37.156'N, 67 ° 20.787 W (NAD83).

3.2.2 SEDIMENT QUALITY

Sediments from MADS are predominantly fine-grained, composed primarily of reddish-tan over gray sandy silt (USACE, 2003). Cohesive mud clasts have been observed at the sediment surface, probably due to bioturbation. One area on the southwest site of the disposal mound was observed to contain historic dredge material displaying a poorly sorted mix of pebbles, sandy silt, and shell fragments. USACE (2003) contains additional grain size information and photographs of the MADS sediments.

Bulk sediment analysis of disposal site was not conducted because the material to be dredged has very little contamination and is not located near any known significant sources of contamination.

3.2.3 WATER QUALITY

The Maine Bureau of Water Quality Control classifies the waters of Machias Bay as SB. Class SB waters are suitable for water contact recreation and fishing, for the harvesting and propagation of shellfish, and for fish and wildlife habitat.

3.2.4 AQUATIC RESOURCES

3.2.4.1 Benthos

Benthic habit conditions throughout the disposal site and surrounding reference areas appear to be moderately disturbed, supporting both opportunistic species as well as an advanced infaunal population. July 2002 studies of the site using a sediment profile camera (REMOTS) indicated that the surface sediments comprising the historic mound and surrounding disposal site stations support a diverse benthic community consisting of both surface-dwelling and deeper-dwelling infauna (USACE, 2003).

3.2.4.2 Fish

The fish communities present at the disposal site are similar to those described in section 3.1.4.2 and section 3.1.6.

3.2.4.3 Shellfish, Crabs, and Lobster

No shellfish resources have been documented to occur within the disposal site (USACE 2003).

3.2.4.4 Submerged Aquatic Vegetation

There is no SAV present at the MADS.

3.2.5 WILDLIFE RESOURCES

The MADS is located in open water and does not support a wildlife population.

3.2.6 ESSENTIAL FISH HABITAT

MADS is located within the same 10' x 10' square of latitude and longitude which includes Bucks Harbor. A list of federally managed species can be found in section 3.1.6 of this report.

3.2.7 THREATENED AND ENDANGERED SPECIES

Coordination with the U.S Fish and Wildlife Service and National Marine Fisheries Service indicates that Atlantic salmon (*Salmo salar*) are present in the project area. Humpback whales (*Megapetera novaengliae*), right whales (*Eubalaena glacialis*), fin whales (*Balaenoptera physalus*), and harbor seals (*Phoca vitulina*) have the potential to occur at the disposal site.

3.2.8 AIR QUALITY

The MADS is located in Washington County, Maine. See section 3.1.8 of this report for Air Quality information.

3.2.9 ARCHAEOLOGICAL RESOURCES

MADS is a previously used disposal site. No archaeological resources are anticipated to be present.

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 PHYSICAL SETTING

Dredging will temporarily increase turbidity in the project area. However, any turbidity impacts will be short-term and localized around the dredging area. Consequently, there should be no significant impacts to local resources from the temporary increases in turbidity. All areas to be dredged are shallow subtidal environments, therefore this project will not impact any intertidal flat habitat.

4.2 SEDIMENT QUALITY

4.2.1. Dredging Site

Sediment quality at the dredging site should remain similar to the existing conditions after the dredging is performed. Vibracore samples from the project area showed homogeneous sediment profiles from the sediment surface to depth. The sediments that remain following dredging should be similar to the existing sediments.

Chemical testing of the Bucks Harbor sediments did not reveal any elevated contaminants. Therefore, the sediment chemistry during and following dredge activities should not change significantly.

4.2.2. Disposal Site

Based on the physical and chemical data, dredged material from the Bucks Harbor project is considered suitable for unconfined open water disposal. Sediment composition at the disposal area will not be significantly impacted. Sediments from the areas to be dredged are predominantly clay and silt, while the sediments at the historic disposal site are mostly silt.

4.3 WATER QUALITY

No significant long-term adverse water quality impacts are anticipated from the dredging and disposal operations. However, short-term impacts to water clarity from increased turbidity is expected. Dredging will cause a temporary increase in suspended sediments. Resuspension of sediments is generally due to the dynamic impact of the bucket on the channel bottom, the spillage and leakage from the filled bucket, and the washing action of the empty bucket falling through the water column (Hayes, 1986). An open clamshell bucket could resuspend solids concentration of 150-900 mg/l within 100 feet, 100-600 mg/l within 200 ft and 75-350 mg/l within 400 feet downstream of the dredge (Hayes, 1986). Increased turbidity levels are expected at the dredge and disposal site. Silty material would be expected to stay suspended for a period of time, but cease with the completion of construction.

Localized releases of bottom sediments with a high biological oxygen demand (BOD) may occur during the dredging process. These sediments may deplete the oxygen available for fish and other marine resources in the area of the sediment plume. However, these sediments should not present a substantive impact to any resource in the harbor as the sediments plumes generated for the proposed project are anticipated to be short-term and highly localized.

4.4 AQUATIC RESOURCES

4.4.1. Dredge Site

4.4.1.1 Benthos

Dredging operations would have no significant adverse impact on aquatic resources in Bucks Harbor. Dredging would destroy the existing benthic invertebrate community in the dredged areas. Most sedentary organisms associated with the bottom sediments would also be destroyed. Most motile organisms, such as crabs and finfish, would probably be able to avoid the dredge. Recolonization of the dredged areas should commence immediately after construction and return to a community resembling the pre-dredge community within 1 to 2 years. Studies by McCauley et al. (1977) in Oregon indicated that pre-dredging conditions in a channel can be reestablished quickly after dredging occurs.

4.4.1.2 Fish

The proposed project should not have significant impacts to the fish communities in the dredging area. Only a small area in the vicinity of the dredging site is likely to be impacted by elevated concentrations of suspended sediments, or sedimentation because concentrations would drop rapidly following the cessation of dredging. Most fish and shellfish are quite tolerant of short-term exposure to elevated suspended sediment levels and those in the dredging area are unlikely to be significantly impacted by this project (Stern and Skickle 1978, Barr 1987). Fish can also leave the area of disturbance during the construction period.

4.4.1.3 Shellfish, Crabs, and Lobsters

The proposed project should not have significant impacts to shellfish, crab, and lobster resources in the dredging area. As discussed above, the main impact to resources from this project will be increases in turbidity. Adult lobsters are also tolerant of exposure to elevated suspended sediment concentrations (Stern and Stickle 1978), therefore those inhabiting the nearby channel jetties should not be significantly impacted by the project. Impacts to shellfish resources in the vicinity of the dredging operation, including the mussel beds located adjacent to the proposed turning basin, would be minimal as the impact area will be highly localized.

4.4.1.4 Submerged Aquatic Vegetation

Impacts to submerged aquatic vegetation (SAV) are expected to be minimal as no beds are located in the dredging area and turbidity plumes are anticipated to be transient and short-lived. A 50 foot buffer has been included in the project design the avoid direct impacts (removal) and indirect impacts (side-slope slumping) to SAV.

4.4.2. Disposal Site

4.4.2.1 Benthos

Disposal of the dredged material at they historic disposal site would likely destroy existing benthic invertebrate communities. Few individuals of the common soft-bodied species are likely to survive burial. Rapid recolonization of the site would occur, however, and any temporary

reduction in invertebrate abundance and diversity at the sites is not expected to have any significant long-term impacts.

4.4.2.2 Fish

Fish in the waters adjacent to the disposal site would be exposed to elevated concentrations of suspended sediments for brief periods. However, these concentrations would drop rapidly following the cessation of disposal. No more than minimal adverse impacts to fish due to the project are expected.

4.4.2.3 Shellfish, Crabs, and Lobsters

No impacts to shellfish, crabs, and lobsters are anticipated at the disposal site.

4.4.2.4 Submerged Aquatic Vegetation

No impacts to SAV are anticipated at the disposal site.

4.5 WILDLIFE

The project should have no significant adverse impact on waterfowl or other wildlife occurring in the vicinity of the Bucks Harbor anchorage area and channel. Some individuals may be displaced during dredging activities, but use of the area by wildlife should occur rapidly after completion of the project.

4.6 ESSENTIAL FISH HABITAT ASSESSMENT

The dredging of Bucks Harbor and the open water disposal of the material at MADS should have minimal direct and cumulative effects on designated Essential Fish Habitat. A mechanical dredge will be used to dredge the material from the project. Effects to EFH in the project area should be limited to minor increases in turbidity levels and the removal of the existing benthic community in the areas being dredged. Increases in turbidity in the dredge area will be short-term and localized and benthic resources in the project area are anticipated recover to predredge conditions within one to two years. Impacts at the disposal area will also include short-term increases in turbidity and the burial of benthic organisms. The turbidity impacts from disposal will be short-term and localized and benthic resources should recover within the same timeframe as the dredged area. The following paragraphs detail the impacts to the managed fish species in the project and disposal area:

EFH is designated in the project area for juvenile and adult Atlantic cod (*Gadus morhua)*. Atlantic cod generally prefer bottom habitats of shallow gravel/ cobble. All adult cod are generally found in deeper waters than those found in the project area. Due to the Atlantic cod's mobility and the lack of proper substrate in the project area, this project is expected to have minimal effects on Atlantic cod EFH.

EFH is designated in the project area for juvenile and adult Atlantic salmon (*Salmo salar)*. The area of the Machias Watershed is listed in National Marine Fisheries Service (NMFS) source documents (NMFS, 2001) as an aquatic habitat that is historically or currently accessible

for salmon migration. Juvenile and spawning adult Atlantic salmon generally prefer bottom habitats of shallow gravel/ cobble, while oceanic adults are primarily found in the pelagic waters of the continental shelf. Due to the Atlantic salmon's mobility and the lack of proper substrate in the project area, this project is expected to have minimal effects on salmon EFH.

EFH is designated within the project area for juvenile pollock (*Pollachius virens*). Juvenile pollock can be found in waters with depths up to 250 meters, salinity between 29 and 32 ppt, and temperatures below 18°C. This project is expected to have minimal effects on EFH for pollock as the species is highly mobile and should be able to avoid construction areas.

EFH is designated within the project area for juvenile and adult red hake (*Urophycis chuss*). Juvenile red hake are most often observed waters with temperatures less than 16ºC and salinities between 31 and 33 ppm, while adult red hake are generally observed in waters with depths between 10 and 130 meters. This project is expected to have minimal effects on EFH for red hake as the project area is generally shallower than their preferred habitat.

EFH is designated within the project area for juvenile and adult white hake (*Urophycis tenuis*). Juvenile white hake are most often observed waters with temperatures less than 15ºC and depths between 5 and 225 meters, while adult white hake are generally observed in waters with depths between 5 and 325 meters. This project is expected to have minimal effects on EFH for white hake as the project area is shallower than their preferred habitat.

EFH is designated within the project area for all life stages of the winter flounder (*Pleuronectes americanus*). Eggs are found along inshore areas from February to November in bottom habitats with a substrate of sand, muddy sand, mud, and gravel, with temperatures less than 10º C, salinities from 10 to 30ppt., and water depths less than 5 meters. Larvae are found along inshore areas from March to July in water temperatures less than 15ºC, salinities from 4 to 30 ppt, and water depths less than 6 meters. Juveniles are found along inshore areas in bottom habitats with a substrate of mud or fine grained sand, with water temperatures below 25ºC, depths from 1 to 50 meters, and salinities between 10 and 30 ppt. Adults are found along inshore areas in bottom habitats including estuaries with a substrate of mud, sand, and gravel with water temperatures below 25ºC, depths from 1 to 100 meters, and salinities between 15 and 33 ppt. Spawning adults occur in similar environments, however water temperature for spawning is below 15ºC and depths are less than 6 meters. Winter flounder are most often observed spawning during the months February - June. Although EFH for the winter flounder is within the project area, this species is broadly distributed in north and mid-Atlantic waters from the Gulf of Maine to Delaware Bay. Any disruption of EFH will be associated with the dredging activities and therefore will not be long-term. Winter flounder adults and juveniles should be able to avoid any potential impacts because of their mobility. Minimal amounts of winter flounder eggs and larvae may be impacted during construction, however, impacts to these life stages will be short-term and localized and no more than minimal impacts are anticipated.. No more than minimal impact on all life stages of winter flounder EFH is anticipated as a result of this project.

EFH is designated within the project area for all life stages of the yellowtail flounder (*Pleuronectes ferruginea*). No effects on EFH for yellowtail flounder are expected because all life stages of this species generally occur in waters with depths greater than those present in the project area.

EFH is designated within the project area for all life stages of the windowpane flounder (*Scopthalmus aquosus*). Eggs are buoyant and typically found in the water column in water depths of 1 meter to 70 meters. Larvae are found in pelagic waters. Juveniles and adults prefer bottom habitats of mud or fine-grained sand and can be found in salinities ranging from 5.5 ppt to 36 ppt. Seasonal occurrences in the project area are generally from February to November, with peaks in occurring May and October. Although EFH for the windowpane is within the project area, this species is broadly distributed in north and mid-Atlantic waters from the Gulf of Maine to Cape Hatteras. Any disruption of EFH will be associated with the dredging activities and therefore will not be long-term. Windowpane flounder adults and juveniles should be able to avoid any potential impacts because of their mobility. Eggs and larvae will only have the potential to be impacted by localized, short-term turbidity associated with the construction activities. Therefore, no more than minimal impact on all life stages of windowpane flounder EFH is anticipated as a result of this project.

EFH is designated within the project area for all life stages of American plaice (*Hippoglossoides platessoides*). Eggs and Larvae are found in surface waters over depths of 30 – 130 meters. Juvenile and adults typically prefer respective depths of 15 to 130 meters, and 45 to 175 meters. All life stages of this species generally prefer depths that are greater than those found within the project area, therefore no more than minimal impact is expected to occur to American plaice EFH.

EFH is designated within the project area for all life stages of ocean pout (*Macrozoarces americanus*). Eggs and Larvae are found in hard bottom habitats with temperatures less than 10ºC, and salinities ranging from 32 – 34 ppt. Juveniles are found in smooth bottom habitats near rocks or algae in waters with temperatures less than 14ºC. Adults are found in waters with temperatures less than 15ºC, salinities ranging from 32 – 34 ppt, and bottom habitats with soft sediment except during spawning season (later summer – early winter) when they prefer hard substrate. Due to the ocean pout's mobility and the lack of hard substrate in the project area, this project is expected to have minimal effects on ocean pout EFH.

EFH is designated within the project area for all life stages of Atlantic halibut (*Hippoglossus hippoglossus*). No effects on EFH forhalibut are expected because all life stages of this species generally occur in waters with depths greater than those present in the project area.

EFH is designated within the project area for all life stages of Atlantic sea scallop (*Placopecten magellanicus*). All life stages of this species generally occur in pelagic waters and bottom habitats with a substrate of gravelly sand, shell fragments, and pebbles. Due to the lack of suitable substrate in the project area, this project is expected to have minimal effects on Atlantic sea scallop EFH.

4.7 THREATENED AND ENDANGERED SPECIES

This project is anticipated to have no significant impact on any State or Federally listed threatened or endangered species. While Atlantic salmon may be present in the project area, a construction window of November 8 through April 9 will avoid impacts to the resource. Trained marine mammal observers will be present during disposal events to ensure that no marine mammals are in the project area.

Coordination letters from NMFS and USFWS regarding threatened and endangered species are contained in Appendix C.

4.8 AIR QUALITY STATEMENT OF CONFORMITY

The improvement dredging of Bucks Harbor is subject to Clean Air Act requirements. However, since the project is located in an attainment area (Washington County) this project is not subject to the general conformity rule and a air quality conformity analysis is not needed.

The project should have no long-term impacts on air quality. During construction equipment operating on the site would emit pollutants including nitrogen oxides that can lead to the formation of ozone. In order to minimize air quality effects during construction, construction activities would comply with applicable provisions of the Maine Air Quality Control Regulations pertaining to dust, odors, construction, noise, and motor vehicle emissions.

4.9 HISTORIC AND ARCHAEOLOGICAL RESOURCES

Coordination has been completed with the Maine State Historic Preservation Officer and the five Maine Federal Indian Tribes which have concurred with our determination that significant cultural resources will not be impacted by the project. No written responses were received within 30 days, so concurrence was assumed.

5.0 CUMULATIVE EFFECTS

Cumulative impacts are those resulting from the incremental impact of the proposed action when added to other past, present, and reasonably foreseeable future actions. Past and current activities in Bucks Harbor include the dredging of the project and navigation through the channel and anchorages. Past and current activities at the disposal site include navigation and limited commercial fishing. The proposed improvements and disposal activities would not result in any expansion of either the commercial or recreational fleets at Bucks Harbor. Reasonably foreseeable future actions include the continuation of periodic maintenance dredging and navigation activities (i.e., recreational boating and commercial fishing fleet usage). Impacts from future maintenance dredging are anticipated to be similar to those documented in this Environmental Assessment. There are no known proposed dredging activities in Bucks Harbor.

Regionally, the dredging of Bucks Harbor will assist the lobster fishery that exists in northern Maine. The expansion of the anchorage areas in Bucks Harbor will provide shelter and safe navigation for existing commercial lobster fishing vessels. This is essential for the continuance of the commercial lobstering industry in Maine. The cumulative impacts on marine resources from dredging will be short-term and minimal and should not contribute to any loss of regional resources.

Based on the impacts stated above, no significant cumulative impacts are projected as a result of the proposed project.

6.0 ENVIRONMENTAL JUSTICE AND OTHER CONSIDERATIONS

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, " require federal agencies to identify and address disproportionately high and adverse human health or environmental effects of its program, policies, and activities on minority and low-income populations in the U.S., including Native Americans. The Proposed Action will not have any disproportionately high or adverse impacts on minority or low-income populations, or any adverse short or long-term environmental justice impacts because the project is not located near any areas with these populations.

Executive Order 13045, "Protection of Children from Environmental Health Risks and Safety Risks," requires federal agencies to identify and assess environmental health risks and safety risks that may disproportionately affect children. The Proposed Action will not pose any significant or adverse short or long-term health and safety risks to children because access to the project area during construction will be limited as it will be occurring in the harbor and therefore should not pose a risk to children.

7.0 MEASURES TAKEN TO MINIMIZE ENVIRONMENTAL CONSEQUECES

The following actions would minimize potential adverse impacts associated with this project.

1. The dredging contractor will be required to fully accommodate vessel traffic during dredging operations.

2. Before any construction activities begin, the disposal area will be clearly delineated to assure disposal in designated area(s).

3. Contractors will be responsible for complying with any special conditions and/or stipulations incorporated into the appropriate Federal and state regulatory approvals.

4. Mobilization and any potential blasting activities (none expected) will be limited to a period between October 1 and April 9. Dredging and disposal activities will be limited to a period between November 8 and April 9 to avoid impacts to biological resources (fisheries/shellfish).

8.0 REFERENCES CITED

Barr, B. 1987. Dredging Handbook. Massachusetts Coastal Zone Management.

Hayes, Donald F. 1986. "Guide to Selecting a Dredge for Minimizing Resuspension of Sediment" Environmental Effects of Dredging Technical Notes EEDP-09-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Miss.

McCauley, J.E., R.A. Parr, and D.R. Hancock. 1977. Benthic Infauna and Maintenance Dredging: A Case Study. Water Research 11:233-242.

NOAA, 2005. Final Report on the Maine - New Hampshire Inshore Groundfish Trawl Survey. Prepared by Maine Department of Marine Resources. Submitted to NOAA Fisheries Northeast Region. 59 pp.

National Wetlands Inventory, 2007. http://wetlandsfws.er.usgs.gov/NWI/index.html

Schetting, S.I. and P.A. Schetting. 1980. An Ecological Characterization of Coastal Maine. USFWS, Northeast Region, Newton Corner, Massachusetts.

Stern, E.M. and W.B. Stickle. 1978. Effects of Turbidity and Suspended Material in Aquatic Environments. U.S. Army COE Waterways Exp. Stat. Tech. Rep. D-78-21.

USACE. 2003. Monitoring Survey at the Machias Bay Disposal Site, July 2002. US Army Corps of Engineers, DAMOS Program. 47 pp.

Woods Hole Group. 2004. Bucks Harbor Sediment sampling and Testing, Machiasport, Maine. Submitted to US Army Corps of Engineers, Concord, MA 01742.

9.0 COORDINATION

Coordination has been conducted with the appropriate state and Federal agencies. Copies of the public notice and coordination letters received are contained in Appendix A. Coordination has occurred with the following agencies and officials:

US Environmental Protection Agency
US Fish and Wildlife Service
National Marine Fisheries Services
United States Coast Guard
Maine Department of Environmental Protection
Maine Office of State Planning
Maine State Historic Preservation Commission
Maine Department of Marine Resources
Town of Machiasport Town Manager
Town of Machiasport Board of Selectmen
Town of Machiasport Harbor Master

10.0 COMPLIANCE WITH ENVIRONMENTAL FEDERAL STATUTES AND EXECUTIVE ORDERS

Federal Statutes

1. Archaeological Resources Protection Act of 1979, as amended, 16 USC 470 et seq.

Compliance: Issuance of a permit from the Federal land manager to excavate or remove archaeological resources located on public or Indian lands signifies compliance. Not applicable.

2. Preservation of Historic and Archeological Data Act of 1974, as amended, 16 U.S.C. 469 et seq.

Compliance: Project has been coordinated with the State Historic Preservation Officer. No impacts to archaeological resources are anticipated.

3. American Indian Religious Freedom Act of 1978, 42 U.S.C. 1996.

Compliance: Must ensure access by Native Americans to sacred sites, possession of sacred objects, and the freedom to worship through ceremonials and traditional rites. This act is not applicable as there were no sites identified in the project area.

4. Clean Air Act, as amended, 42 U.S.C. 7401 et seq.

Compliance: Public notice of the availability of this report and statement of conformity to the Environmental Protection Agency signifies compliance pursuant to Sections 176c and 309 of the Clean Air Act.

5. Clean Water Act of 1977 (Federal Water Pollution Control Act Amendments of 1972) 33 U.S.C. 1251 et seq.

Compliance: A Section 404(b)(1) Evaluation and Compliance Review has been incorporated into the project report. An application shall be filed for State Water Quality Certification pursuant to Section 401 of the Clean Water Act.

6. Coastal Zone Management Act of 1972, as amended, 16 U.S.C. 1451 et seq.

Compliance: A CZM consistency determination shall be provided to the State for review and concurrence that the proposed project is consistent with the approved State CZM program.

7. Endangered Species Act of 1973, as amended, 16 U.S.C. 1531 et seq.

Compliance: Coordination with the U.S. Fish and Wildlife Service (FWS) and/or National Marine Fisheries Service (NMFS) has been completed pursuant to Section 7 of the Endangered Species Act.

8. Estuarine Areas Act, 16 U.S.C. 1221 et seq.

Compliance: Not applicable. Applicable only if report is being submitted to Congress.

9. Federal Water Project Recreation Act, as amended, 16 U.S.C. 4601-12 et seq.

Compliance: Public notice of availability to the project report to the National Park Service (NPS) and Office of Statewide Planning relative to the Federal and State comprehensive outdoor recreation plans signifies compliance with this Act.

10. Fish and Wildlife Coordination Act, as amended, 16 U.S.C. 661 et seq.

Compliance: Coordination with the FWS, NMFS, and State fish and wildlife agencies signifies compliance with the Fish and Wildlife Coordination Act.

11. Land and Water Conservation Fund Act of 1965, as amended, 16 U.S.C. 4601-4 et seq.

Compliance: Public notice of the availability of this report to the National Park Service (NPS) and the Office of Statewide Planning relative to the Federal and State comprehensive outdoor recreation plans signifies compliance with this Act.

12. Marine Protection, Research, and Sanctuaries Act of 1971, as amended, 33 U.S.C. 1401 et seq.

Compliance: Not applicable as the project does not involve the transportation or disposal of dredged material in ocean waters pursuant to Sections 102 and 103 of the Act, respectively.

13. National Historic Preservation Act of 1966, as amended, 16 U.S.C. 470 et seq.

Compliance: Coordination with the State Historic Preservation Office signifies compliance.

14. Native American Graves Protection and Repatriation Act (NAGPRA), 25 U.S.C. 3000-3013, 18 U.S.C. 1170

Compliance: Regulations implementing NAGPRA will be followed if discovery of human remains and/or funerary items occur during implementation of this project.

15. National Environmental Policy Act of 1969, as amended, 42 U.S.C 4321 et seq.

Compliance: Preparation of an Environmental Assessment signifies partial compliance with NEPA. Full compliance shall be noted at the time the Finding of No Significant Impact or Record of Decision is issued.

16. Rivers and Harbors Act of 1899, as amended, 33 U.S.C. 401 et seq.

Compliance: No requirements for projects or programs authorized by Congress.

17. Watershed Protection and Flood Prevention Act as amended, 16 U.S.C 1001 et seq.

Compliance: Floodplain impacts have been considered in project planning.

18. Wild and Scenic Rivers Act, as amended, 16 U.S.C 1271 et seq.

Compliance: Not applicable, as this project is not located in an area of concern.

19. Magnuson-Stevens Act, as amended, 16 U.S.C. 1801 et seq.

Compliance: Coordination with the National Marine Fisheries Service and preparation of an Essential Fish Habitat (EFH) Assessment signifies compliance with the EFH provisions of the Magnuson-Stevens Act.

Executive Orders

1. Executive Order 11593, Protection and Enhancement of the Cultural Environment, 13 May 1971

Compliance: Coordination with the State Historic Preservation Officer signifies compliance.

2. Executive Order 11988, Floodplain Management, 24 May 1977 amended by Executive Order 12148, 20 July 1979.

Compliance: Public notice of the availability of this report or public review fulfills the requirements of Executive Order 11988, Section 2(a)(2).

3. Executive Order 11990, Protection of Wetlands, 24 May 1977.

Compliance: Public notice of the availability of this report for public review fulfills the requirements of Executive Order 11990, Section 2 (b).

4. Executive Order 12114, Environmental Effects Abroad of Major Federal Actions, 4 January 1979.

Compliance: Not applicable to projects located within the United States.

5. Executive Order 12898, Environmental Justice, 11 February 1994.

Compliance: Not applicable, the project is not expected to have a significant impact on minority or low income population, or any other population in the United States.

6. Executive 13007, Accommodation of Sacred Sites, 24 May 1996

Compliance: Not applicable as this project does not occur on Federal lands.

7. Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks. 21 April, 1997.

Compliance: The project would not create a disproportionate environmental health or safety risk for children.

8. Executive Order 13175, Consultation and Coordination with Indian Tribal Governments, 6 November 2000.

Compliance: Consultation with Indian Tribal Governments, where applicable, and consistent with executive memoranda, DoD Indian policy, and USACE Tribal Policy Principles signifies compliance. Consultation with tribes in the project area was done. Therefore, this project complies with this Executive Order.

Executive Memorandum

1. Analysis of Impacts on Prime or Unique Agricultural Lands in Implementing NEPA, 11 August 1980.

Compliance: Not applicable. The project does not involve or impact agricultural lands as the project consists of dredging and disposal of dredged material in open water.

2. White House Memorandum, Government-to-Government Relations with Indian Tribes, 29 April 1994.

Compliance: Consultation with Federally Recognized Indian Tribes, where appropriate, signifies

compliance. Consultation with tribes in the project area was done. Therefore this project complies with this Executive Memorandum.

Bucks Harbor
Machiasport, Maine

Section 404 (b)(1) Evaluation

CLEAN WATER ACT SECTION 404 (b)(1) EVALUATION
U.S. ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT, CONCORD, MA

PROJECT: Bucks Harbor Navigation Maintenance and Improvement Project

PROJECT MANAGER: Mr. Christopher Hatfield Phone: (978) 318-8520

FORM COMPLETED BY: Mr. Todd Randall Phone: (978) 318-8518

PROJECT DESCRIPTION: The recommended plan will expand the existing project from 11.0 acres of 8 foot deep anchorage and 2.0 acres of 8 foot maneuvering area to a total of 13.5 acres of 6-foot anchorage, 20.6 acres of 8-foot anchorage, and an 80 foot wide by 8 foot deep access channel along the south side of the harbor (2.1 acres). Approximately 1.0 acre of turning basin will also be added to the terminus of the channel. The total project size will increase by a total of 24.2 acres. Construction of this improvement project will involve a combination of maintenance and improvement dredging (88,300 cubic yards). The material will be dredged mechanically and placed into scows which will then be towed to the Machias Bay Disposal Site and dumped. Dredging and disposal activities will be limited to a period between November 8 and April 9 to avoid impacts to biological resources (fisheries/shellfish).

NEW ENGLAND DISTRICT
U.S. ARMY CORPS OF ENGINEERS
Evaluation of Clean Water Act Section 404(b)(1) Guidelines

PROJECT: Bucks Harbor Navigation Maintenance and Improvement Project

1. Review of Compliance (Section 230.10(a)-(d)).

a.	The discharge represents the least environmentally damaging practicable alternative and if in a special aquatic site, the activity associated with the discharge must have direct access or proximity to, or be located in the aquatic ecosystem to fulfill its basic purpose.	| X | YES	| | NO
b.	The activity does not appear to: 1) violate applicable state water quality standards or effluent standards prohibited under Section 307 of the CWA; 2) jeopardize the existence of Federally listed threatened and endangered species or their critical habitat; and 3) violate requirements of any Federally designated marine sanctuary	| X | YES	| | NO
c.	The activity will not cause or contribute to significant degradation of waters of the U.S. including adverse effects on human health, life stages of organisms dependent on the aquatic ecosystem, ecosystem diversity, productivity and stability, and recreational, aesthetic, and economic values	| X | YES	| | NO
d.	Appropriate and practicable steps have been taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem	| X | YES	| | NO

2. Technical Evaluation Factors (Subparts C-F).

	N/A	Not Signif-icant	Signif-icant*
a. Potential Impacts on Physical and Chemical Characteristics of the Aquatic Ecosystem (Subpart C).			
1) Substrate.		X	
2) Suspended particulates/turbidity.		X	
3) Water.		X	
4) Current patterns and water circulation.		X	
5) Normal water fluctuations.		X	
6) Salinity gradients.		X	
b. Potential Impacts on Biological Characteristics of the Aquatic Ecosystem (Subpart D).			
1) Threatened and endangered species.		X	
2) Fish, crustaceans, mollusks and other aquatic organisms in the food web.		X	
3) Other wildlife.		X	
c. Potential Impacts on Special Aquatic Sites (Subpart E).			
1) Sanctuaries and refuges.	X		
2) Wetlands.		X	
3) Mud flats.		X	
4) Vegetated shallows.		X	
5) Coral reefs.	X		
6) Riffle and pool complexes.	X		
d. Potential Effects on Human Use Characteristics (Subpart F)			
1) Municipal and private water supplies.	X		
2) Recreational and commercial fisheries.		X	
3) Water-related recreation.		X	
4) Aesthetics.		X	
5) Parks, national and historic monuments, national seashores, wilderness areas, research sites, and similar preserves.	X		

3. Evaluation and Testing (Subpart G).

a. The following information has been considered in evaluating the biological availability of possible contaminants in dredged or fill material. (Check only those appropriate.)

1) Physical characteristics.....	X
2) Hydrography in relation to known or anticipated sources of contaminants.....	
3) Results from previous testing of the material or similar material in the vicinity of the project ..	X
4) Known, significant sources of persistent pesticides from land runoff or percolation	
5) Spill records for petroleum products or designated hazardous substances (Section 311 of CWA)	

6)	Public records of significant introduction of contaminants from industries, municipalities, or other sources	| |
7)	Known existence of substantial material deposits of substances which could be released in harmful quantities to the aquatic environment by man-induced discharge activities	| |
8)	Other sources (specify)	| |

List appropriate references.

Environmental Assessment for Bucks Harbor Navigation Improvement Project – 2007. US Army Corps of Engineers, Concord, Mass.

b. An evaluation of the appropriate information in 3a above indicates that there is reason to believe the proposed dredge or fill material is not a carrier of contaminants, or that levels of contaminants are substantively similar at extraction and disposal sites and not likely to require constraints. The material meets the testing exclusion criteria.

| X |	|__|
YES	NO

4. Disposal Site Delineation (Section 230.11(f)).

a. The following factors, as appropriate, have been considered in evaluating the disposal site.

1)	Depth of water at disposal site	| X |
2)	Current velocity, direction, and variability at the disposal site	| X |
3)	Degree of turbulence	| X |
4)	Water column stratification	| |
5)	Discharge vessel speed and direction	| |
6)	Rate of discharge	| X |
7)	Dredged material characteristics (constituents, amount, and type of material, settling velocities)	| X |
8)	Number of discharges per unit of time	| |
9)	Other factors affecting rates and patterns of mixing (specify)	| X |

List appropriate references:

Environmental Assessment for Bucks Harbor Navigation Improvement Project – 2007. US Army Corps of Engineers, Concord, Mass.

b. An evaluation of the appropriate factors in 4a above indicates that the disposal site and/or size of mixing zone are acceptable

| X |	| |
YES	NO

5. Actions To Minimize Adverse Effects (Subpart H).

All appropriate and practicable steps have been taken, through application of recommendation of Section 230.70-230.77 to ensure minimal adverse effects of the proposed discharge.

| X |	| |
YES	NO

List actions taken.

1) Disposal site is located in deep water.

6. Factual Determination (Section 230.11).

A review of appropriate information as identified in items 2 - 5 above indicates that there is minimal potential for short or long term environmental effects of the proposed discharge as related to:

a.	Physical substrate (review sections 2a, 3, 4, and 5 above).	YES | X |	NO | |
b.	Water circulation, fluctuation and salinity (review sections 2a, 3, 4, and 5).	YES | X |	NO | |
c.	Suspended particulates/turbidity (review sections 2a, 3, 4, and 5).	YES | X |	NO | |
d.	Contaminant availability (review sections 2a, 3, and 4).	YES | X |	NO | |
e.	Aquatic ecosystem structure, function and organisms(review sections 2b and c, 3, and 5)	YES | X |	NO | |
f.	Proposed disposal site (review sections 2, 4, and 5).	YES | X |	NO | |
g.	Cumulative effects on the aquatic ecosystem.	YES | X |	NO | |
h.	Secondary effects on the aquatic ecosystem.	YES | X |	NO | |

7. Findings of Compliance or non-compliance.

The proposed disposal site for discharge of dredged or fill material complies with the Section 404(b)(1) guidelines ... YES | X | NO | |

_____ DATE

_____
PHILIP T. FEIR
Colonel, Corps of Engineers
District Engineer

Bucks Harbor
Machiasport, Maine

Finding of No Significant Impact

FINDING OF NO SIGNIFICANT IMPACT

The proposed Bucks Harbor navigation improvement and maintenance dredging project involves the mechanical dredging of approximately 88,300 cubic yards of silty material and 100 cy of boulder from the harbor and placing it at the Machias Bay Disposal Site (MADS). Approximately 53,700 cy of the silt and 100cy of boulder is maintenance material from the existing Federal Navigation Project while the additional 34,500 cy of silt is improvement material. Several alternatives including fleet relocation and channel/anchorage design along with various disposal sites were considered for this project.

The recommended improvement plan will expand the existing project from 11.0 acres of 8 foot deep anchorage and 2.0 acres of 8 foot maneuvering area to a total of 13.5 acres of 6-foot anchorage, 20.6 acres of 8-foot anchorage, and an 80 foot wide by 8 foot deep access channel along the south side of the harbor (2.1 acres). Approximately 1.0 acre of turning basin will also be added to the terminus of the channel. The total project size will increase by a total of 24.2 acres. Dredging and disposal activities will be limited to a period between November 8 and April 9 to avoid impacts to biological resources (fisheries/shellfish) in the project area.

This Environmental Assessment has been prepared in accordance with the National Environmental Policy Act of 1969 and all applicable environmental statutes and executive orders. My determination that an Environmental Impact Statement is not required is based upon the following information contained in the Environmental Assessment and the following considerations:

1. The project will have no significant adverse effect upon existing water quality in the dredging or disposal areas.

2. Dredging and disposal operations will cause only localized and temporary increases in turbidity and sedimentation.

3. Benthic organisms impacted by dredging and disposal operations will be replaced by recolonization from adjacent areas.

4. No intertidal areas will be impacted by this project.

5. Impacts to submerged aquatic vegetation (SAV) beds have been avoided.

6. The Maine State Historic Preservation Office and the five Maine Federal Indian Tribes have concurred with the USACE's assessment that there will be no significant cultural resource impacts as a result of this project.

7. Dredging and disposal activities will be limited to the period of 8 November through 9 April, to protect fisheries and shellfisheries.

Based on my review and evaluation of the environmental effects as presented in the Environmental Assessment, I have determined that implementation of the proposed Bucks Harbor Navigation Improvement project and the maintenance dredging of the Federal Navigation Project will have no significant direct, indirect, or cumulative impacts on the quality of the human or natural environment. Because no significant environmental impacts will result, an Environmental Impact Statement is not required and will not be prepared.

_____ _____

Date

PHILIP T. FEIR
Colonel, Corps of Engineers
District Engineer

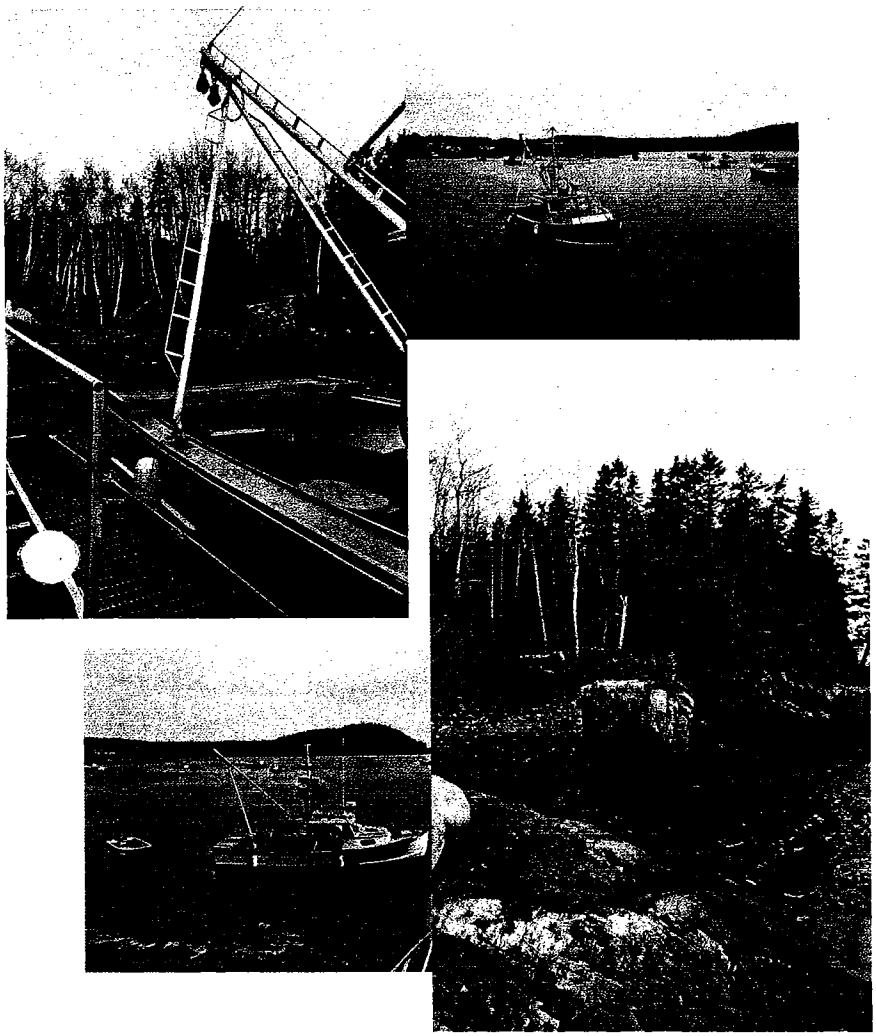
EA - APPENDIX A

SEDIMENT GRAIN SIZE AND CHEMISTRY TEST RESULTS

FINAL REPORT

Environmental Assessment, Sediment Sampling and Testing for Buck's Harbor, Machiasport, Maine

FINAL



Prepared for:

U.S. Army Corps of Engineers
New England District

Prepared by:

Woods Hole Group
Environmental Laboratories
375 Paramount Drive, Suite 2
Raynham, MA 02767

James J. Bajek, LLC

Phillip R. Hunt, CIH

TG&B Marine Services

TG&B Marine Services

FINAL
August 17, 2004

BUCK'S HARBOR
SEDIMENT SAMPLING AND TESTING
MACHIASPORT, MAINE

August 2004

FINAL

Prepared for:
Department of the Army
New England District
Corps of Engineers
696 Virginia Road
Concord, MA 01742

Prepared by:
Woods Hole Group
Environmental Laboratories
375 Paramount Drive, Suite 2
Raynham, MA 02767

USACE CONTRACT NO.: DACW33-D-0006
TASK ORDER NO.: 0020

STATEMENT OF DATA AUTHENTICITY

The enclosed results of sediment sample collection, grain size, and bulk sediment chemistry analyses are representative of the samples collected, received, and analyzed by Woods Hole Group Environmental Laboratories. To the best of my knowledge, the information contained in this report is accurate and complete.

Approved By: Mauva K Sergeant Title: Senior Project Manager

Date: 8/17/04

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1.0 OVERVIEW

As part of the U.S. Army Corps of Engineers, New England District ongoing navigation maintenance-dredging program, sediment samples were collected within Buck's Harbor, Machiasport, Maine. Sampling locations included 12 stations within Buck's Harbor and three reference station samples located within the proposed disposal site in Machias Bay. All 15 sediment samples, including reference stations, were classified using grain size data. The 12 site samples were then composited into four samples for bulk sediment chemistry analysis. The three reference station samples were analyzed individually for bulk sediment chemistry.

2.0 FIELD SAMPLE COLLECTION

Mobilization for this effort began on April 26, 2004. Sampling was conducted on April 28, 2004 by TG&B Marine Services, with oversight and support from James J. Bajek, LLC, and Woods Hole Group Environmental Laboratories (WHGEL). Sampling was conducted from a 35-ft workboat equipped with lifting equipment, an echosounder, and Differential Global Positioning System (DGPS). The in-harbor coring equipment consisted of a gasoline driven mechanical vibracoring device as well as a manual hammer push corer. Sediment collection was conducted using a Ted Young grab for the proposed disposal site, Machias Bay. The type of substrate and required sampling depth dictated what equipment would be used at each of the sampling locations. Sample positioning was accomplished using a DGPS unit. All samples were collected as close as possible to their designated locations, as specified in the Scope of Work. One core sample was collected at each in-harbor location to the proposed dredge depth. The sampling locations can be found in Appendix A. A summary of the sampling coordinates and details related to the field sampling effort and on-site sample processing are presented in the Field Report in Appendix B.

3.0 SAMPLE COMPOSITING

Following review of grain size results, the Corps provided instructions for the preparation of sample composites. Sediment samples were composited in the laboratory as per the composite scheme identified in Table 1.

Table 1. Sample Compositing Scheme for Sediment Samples Collected in Bucks Harbor, Machiasport, Maine.

Composite	Sample Locations
1	A, B and C
2	D, E and F
3	G, H and I
4	J, K and L

The three Reference Samples collected from the proposed disposal area were analyzed individually.

4.0 GRAIN SIZE ANALYSIS

Sediment grain size was performed on samples collected from Buck's Harbor and the proposed Machias Bay disposal site. Grain size analysis was performed using ASTM Method D-422 (ASTM, 1998). Additionally, further classification of the sediments was performed using the Unified Soil Classification System, ASTM Method D-2487 (ASTM, 2000). The data report and a summary of the grain size results can be found in Appendices D and E.

5.0 BULK SEDIMENT CHEMISTRY

Bulk sediment chemistry was performed on four composited samples using grain size results from the twelve sediment samples. In addition, the three reference samples were analyzed individually. Analyses were performed for pesticides, polychlorinated biphenyl congeners (PCBs), polyaromatic hydrocarbons (PAHs), total metals, total organic carbon (TOC), water content, and percent moisture following Inland Testing Manual Protocols, WHGEL Quality Systems Manual (QSM), WHGEL Standard Operating Procedures (SOPs), and reporting limits identified in the Sampling and Analysis Plan (WHGEL, March 2004). Bulk sediment chemistry parameters were performed on the two rinsate blanks as well.

A complete data report, including bulk sediment chemistry results, can be found as Appendix C. Data qualifier definitions are included as Appendix D, and a summary of the bulk sediment chemistry results are presented in Appendix E. All supporting documentation, such as sample tracking sheets, sample receipt logs, etc. can be found as Appendix F.

6.0 REFERENCES

ASTM 1998. Standard Methods for Particle Size Analysis of Soils, Method D-422. In 1998 Annual Book of ASTM Standards, Vol. 4.08. Philadelphia, PA.

ASTM 2000. Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System), D-2847. In 2000 Annual Book of ASTM Standards, Vol. 4.03, and 4.08. Philadelphia, PA.

ASTM 1991. Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures, Method D-2216. In 1998 Annual Book of ASTM Standards, Vol. 4.08 and 14.02. Philadelphia, PA.

Regional Implementation Manual for the Evaluation of Dredged Material Proposed for Disposal in New England Waters, U.S. EPA and U.S. Army Corps of Engineers, New England District, September 2002.

Woods Hole Group Environmental Laboratories, "*Quality Systems Manual (Revision 2.2),*" April 2003.

Woods Hole Group Environmental Laboratories Sampling and Analysis Plan, "*Environmental Assessment, Sediment Sampling and Testing for Buck's Harbor, Machiasport, Maine.*" March 2004.

Woods Hole Group Environmental Laboratories Standard Operating Procedures, *"Analysis of Polynuclear Aromatic Hydrocarbons by Gas Chromatography/Mass Spectrometry with Selected Ion Monitoring (Revision 1.0),"* modified Method 8270-PAH-SIM.

Woods Hole Group Environmental Laboratories Standard Operating Procedures, *"Organochlorine Pesticides by Gas Chromatography/Electron Capture Detector (Revision 1.0)*," Method 8081A

Woods Hole Group Environmental Laboratories Standard Operating Procedures, *"Polychlorinated Biphenyls (PCBs) as Aroclors and Congeners by Gas Chromatography/Electron Capture Detection (Revision 1.0),"* Method 8082

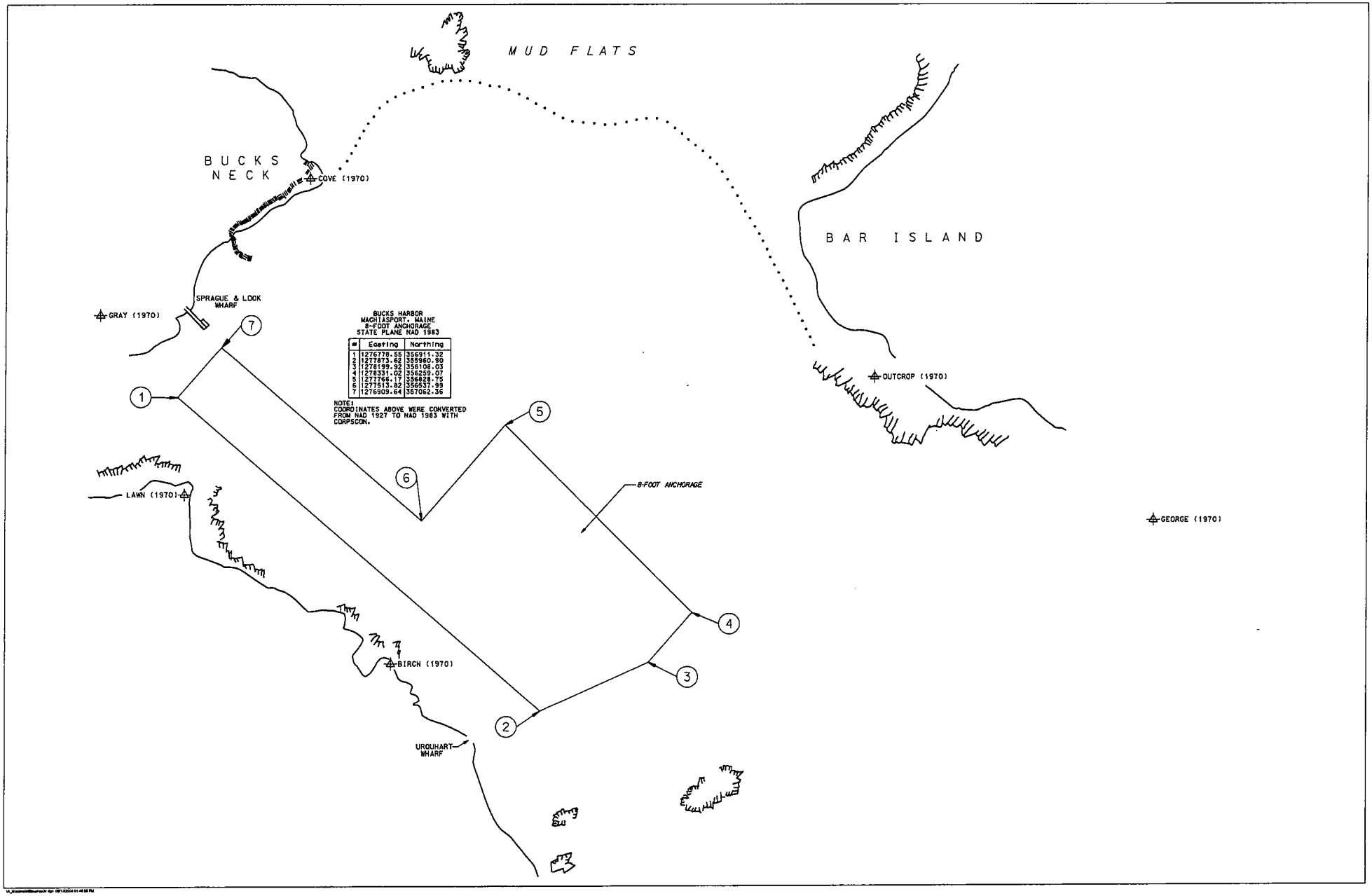
Woods Hole Group Environmental Laboratories Standard Operating Procedures, *"Mercury Determination by Cold Vapor Atomic Absorption Spectroscopy (Revision 2.2),"* Method 7470A.

Woods Hole Group Environmental Laboratories Standard Operating Procedures, *"Inductively Coupled Plasma-Mass Spectrometry (Revision 2.1),"* Method 6020.

Woods Hole Group Environmental Laboratories Standard Operating Procedures, *"Total Organic Carbon in Soil and Sediment (Revision 2.0),"* modified from Method 9060.

APPENDIX A

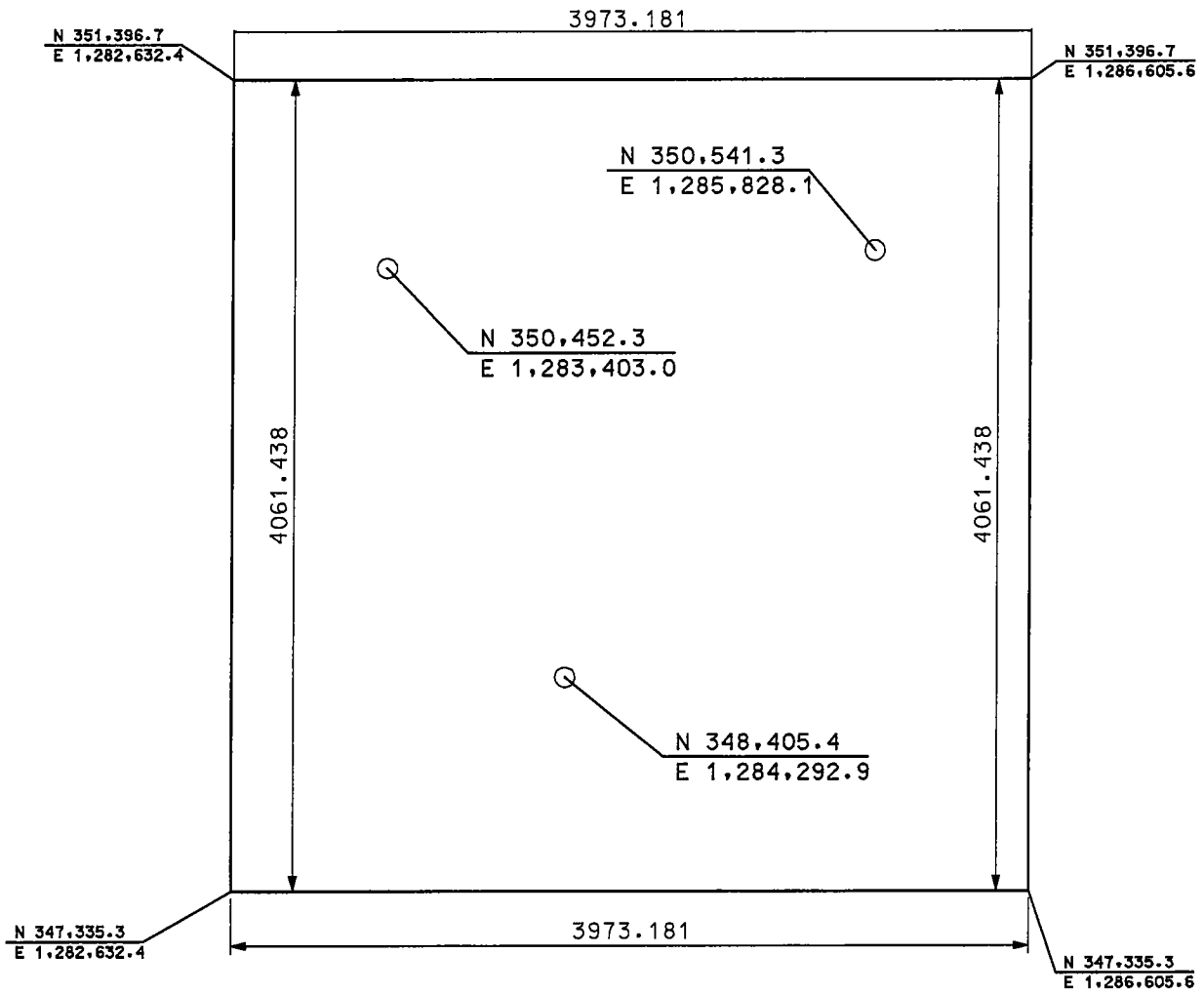
SEDIMENT SAMPLE LOCATIONS



BUCKS HARBOR
MACHIASPORT, MAINE
8-FOOT ANCHORAGE
STATE PLANE NAD 1983

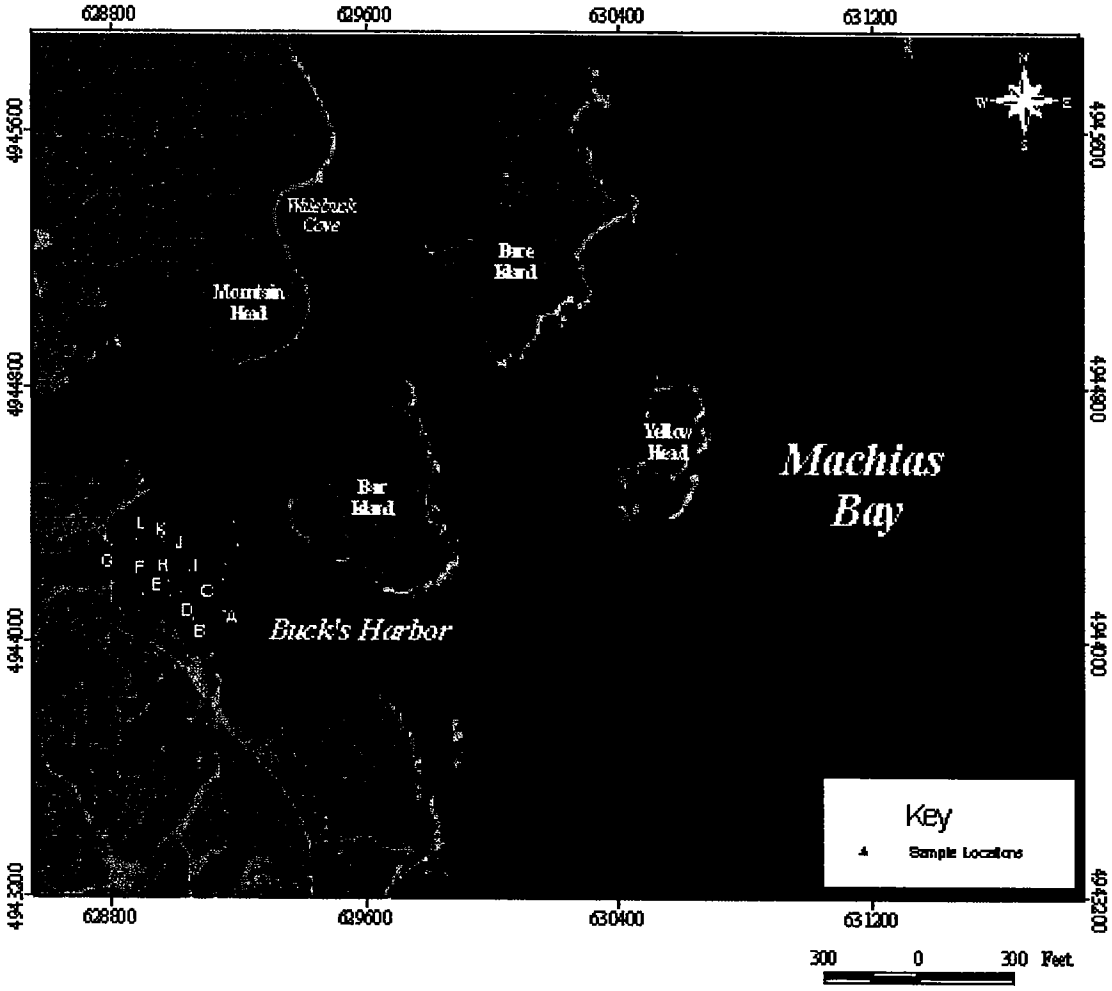
#	Easting	Northing
1	1276778.55	356911.32
2	1277873.62	359960.90
3	1278199.92	356108.03
4	1278331.02	354259.07
5	1277766.17	356828.75
6	1277513.82	356537.99
7	1276909.64	357082.36

NOTE:
COORDINATES ABOVE WERE CONVERTED FROM NAD 1927 TO NAD 1983 WITH CORPSCON.



...\Forrest Knowles\buchsp3x.dgn 03/31/2004 10:03:05 AM

FIGURE 1. BUCK'S HARBOR SAMPLING LOCATIONS



APPENDIX E

SUMMARY OF GRAIN SIZE AND BULK SEDIMENT CHEMISTRY RESULTS

Buck's Harbor, Machiasport, ME
Contract No.: D/ /33-02-D-0006
Task Order: 0020
Chemistry Data Summary

SAMPLE ID		STA A		STA B		STA C		STA D	
SAMPLING DATE		4/28/2004		4/28/2004		4/28/2004		4/28/2004	
LAB SAMPLE ID		0404199-01		0404199-02		0404199-03		0404199-04	
	Units		Qual		Qual		Qual		Qual
Wet Sieve Analysis									
% Coarse	%	0.0		0.0		0.0		0.0	
% Sand	%	2.2		1.4		1.6		0.4	
% Silt	%	30.6		21.4		11.7		4.1	
% Clay	%	67.3		77.2		86.7		95.5	
LL	%	38		48		46		51	
PL	%	26		28		29		29	
PI	%	12		20		17		22	
USCS	%	ML		ML		ML		MH	
Inorganics									
Water Content	%	47		55		53		63	

Buck's Harbor, Machiasport, ME
Contract No.: D[illegible]33-02-D-0006
Task Order: 0020
Chemistry Data Summary

SAMPLE ID		STA E		STA F		STA G		STA H	
SAMPLING DATE		4/28/2004		4/28/2004		4/28/2004		4/28/2004	
LAB SAMPLE ID		0404199-05		0404199-06		0404199-07		0404199-08	
	Units		Qual		Qual		Qual		Qual
Wet Sieve Analysis									
% Coarse	%	0.0		0.0		0.0		0.0	
% Sand	%	0.3		1.1		0.7		7.9	
% Silt	%	3.6		6.7		6.4		49.7	
% Clay	%	96.1		92.2		92.9		42.4	
LL	%	57		57		59		38	
PL	%	28		29		28		30	
PI	%	29		28		31		8	
USCS	%	CH		CH		CH		ML	
Inorganics									
Water Content	%	**75**		**64**		**73**		**35**	

Buck's Harbor, Machiasport, ME
Contract No.: D. /33-02-D-0006
Task Order: 0020
Chemistry Data Summary

SAMPLE ID		STA I		STA J		STA K		STA L	
SAMPLING DATE		4/28/2004		4/28/2004		4/28/2004		4/28/2004	
LAB SAMPLE ID		0404199-09		0404199-10		0404199-11		0404199-12	
	Units		Qual		Qual		Qual		Qual
Wet Sieve Analysis									
% Coarse	%	0.0		0.0		0.0		0.0	
% Sand	%	6.9		3.8		3.6		12.0	
% Silt	%	51.3		26.3		28.4		63.9	
% Clay	%	41.8		69.9		68.0		24.0	
LL	%	27		32		34		33	
PL	%	27		29		28		27	
PI	%	0		2		6		5	
USCS	%	ML		ML		ML		ML	
Inorganics									
Water Content	%	**36**		**38**		**45**		**34**	

Buck's Harbor, Machiasport, ME
Contract No.: D[illegible]V33-02-D-0006
Task Order: 0020
Chemistry Data Summary

SAMPLE ID		REF. 1		REF. 2		REF. 3	
SAMPLING DATE		4/28/2004		4/28/2004		4/28/2004	
LAB SAMPLE ID		0404199-13		0404199-14		0404199-15	
	Units		Qual		Qual		Qual
Wet Sieve Analysis							
% Coarse	%	0.0		0.0		0.0	
% Sand	%	34.2		37.4		45.8	
% Silt	%	56.2		62.4		54.2	
% Clay	%	9.6		0.2		0.0	
LL	%	37		35		34	
PL	%	22		23		22	
PI	%	14		12		12	
USCS	%	ML		ML		ML	
Inorganics							
Water Content	%	**42**		**56**		**48**	

Buck's Harbor, Machiasport, ME
Contract No.: D V33-02-D-0006
Task Order: 0020
Chemistry Data Summary

SAMPLE ID		Rinse Blank PC		Rinse Blank PG		Sta A,B,C Composite		Sta D,E,F Composite	
SAMPLING DATE		04-28-04		04-28-04		04-28-04		04-28-04	
LAB SAMPLE ID		0404198-01		0404198-02		0404198-03		0404198-04	
	Units		Qual		Qual		Qual		Qual
Metals									
Arsenic	µg/L	0.50	U	0.50	U				
Cadmium	µg/L	0.50	U	0.50	U				
Chromium	µg/L	**34**		2.5	U				
Copper	µg/L	**5.5**		2.5	U				
Lead	µg/L	0.50	U	0.50	U				
Mercury	µg/L	0.20	U	0.20	U				
Nickel	µg/L	**22**		2.5	U				
Zinc	µg/L	50	U	50	U				
Arsenic	mg/Kg					**5.0**		**6.3**	
Cadmium	mg/Kg					**0.11**		**0.12**	
Chromium	mg/Kg					**16**		**18**	
Copper	mg/Kg					**11**		**19**	
Lead	mg/Kg					**11**		**15**	
Mercury	mg/Kg					**0.014**		**0.017**	
Nickel	mg/Kg					**14**		**16**	
Zinc	mg/Kg					**40**		**48**	
Pesticides and PCB Congeners by GC/ECD									
Aldrin	µg/Kg					1.1	U	1.2	U
alpha-Chlordane	µg/Kg					1.1	U	1.2	U
gamma-BHC	µg/Kg					1.1	U	1.2	U
gamma-Chlordane	µg/Kg					1.1	U	1.2	U
4,4'-DDD	µg/Kg					1.1	U	1.2	U
4,4'-DDE	µg/Kg					1.1	U	1.2	U
4,4'-DDT	µg/Kg					1.1	U	1.2	U
Dieldrin	µg/Kg					1.1	U	1.2	U
Endosulfan I	µg/Kg					1.1	U	1.2	U
Endosulfan II	µg/Kg					1.1	U	1.2	U
Endosulfan sulfate	µg/Kg					1.1	U	1.2	U
Endrin	µg/Kg					1.1	U	1.2	U
Endrin aldehyde	µg/Kg					1.1	U	1.2	U
Heptachlor	µg/Kg					1.1	U	1.2	U
Heptachlor epoxide (B)	µg/Kg					1.1	U	1.2	U
Hexachlorobenzene	µg/Kg					1.1	U	1.2	U
Methoxychlor	µg/Kg					1.1	U	1.2	U
trans-Nonachlor	µg/Kg					1.1	U	1.2	U
Toxaphene	µg/Kg					110	U	120	U
BZ 8	µg/Kg					1.1	U	1.2	U
BZ 18	µg/Kg					1.1	U	1.2	U
BZ 28	µg/Kg					1.1	U	1.2	U
BZ 44	µg/Kg					1.1	U	1.2	U

Buck's Harbor, Machiasport, ME
Contract No.: D V33-02-D-0006
Task Order: 0020
Chemistry Data Summary

SAMPLE ID		Rinse Blank PC		Rinse Blank PG		Sta A,B,C Composite		Sta D,E,F Composite	
SAMPLING DATE		04-28-04		04-28-04		04-28-04		04-28-04	
LAB SAMPLE ID		0404198-01		0404198-02		0404198-03		0404198-04	
	Units		Qual		Qual		Qual		Qual
BZ 49	µg/Kg					1.1	U	1.2	U
BZ 52	µg/Kg					1.1	U	1.2	U
BZ 66	µg/Kg					1.1	U	1.2	U
BZ 87	µg/Kg					1.1	U	1.2	U
BZ 101	µg/Kg					1.1	U	1.2	U
BZ 105	µg/Kg					1.1	U	1.2	U
BZ 118	µg/Kg					1.1	U	1.2	U
BZ 128	µg/Kg					1.1	U	1.2	U
BZ 138	µg/Kg					1.1	U	1.2	U
BZ 153	µg/Kg					1.1	U	1.2	U
BZ 170	µg/Kg					1.1	U	1.2	U
BZ 180	µg/Kg					1.1	U	1.2	U
BZ 183	µg/Kg					1.1	U	1.2	U
BZ 184	µg/Kg					1.1	U	1.2	U
BZ 187	µg/Kg					1.1	U	1.2	U
BZ 195	µg/Kg					1.1	U	1.2	U
BZ 206	µg/Kg					1.1	U	1.2	U
BZ 209	µg/Kg					1.1	U	1.2	U
Aldrin	µg/L	0.0011	U	0.0011	U				
alpha-Chlordane	µg/L	0.0011	U	0.0011	U				
gamma-BHC	µg/L	0.0011	U	0.0011	U				
gamma-Chlordane	µg/L	0.0011	U	0.0011	U				
4,4'-DDD	µg/L	0.0011	U	0.0011	U				
4,4'-DDE	µg/L	0.0011	U	0.0011	U				
4,4'-DDT	µg/L	0.0011	U	0.0011	U				
Dieldrin	µg/L	0.0011	U	0.0011	U				
Endosulfan I	µg/L	0.0011	U	0.0011	U				
Endosulfan II	µg/L	0.0011	U	0.0011	U				
Endosulfan sulfate	µg/L	0.0011	U	0.0011	U				
Endrin	µg/L	0.0011	U	0.0011	U				
Endrin aldehyde	µg/L	0.0011	U	0.0011	U				
Heptachlor	µg/L	0.0011	U	0.0011	U				
Heptachlor epoxide (B)	µg/L	0.0011	U	0.0011	U				
Hexachlorobenzene	µg/L	0.0011	U	0.0011	U				
Methoxychlor	µg/L	0.0011	U	0.0011	U				
trans-Nonachlor	µg/L	0.0011	U	0.0011	U				
Toxaphene	µg/L	0.11	U	0.11	U				
BZ 8	µg/L	0.0011	U	0.0011	U				
BZ 18	µg/L	0.0011	U	0.0011	U				
BZ 28	µg/L	0.0011	U	0.0011	U				
BZ 44	µg/L	0.0011	U	0.0011	U				
BZ 49	µg/L	0.0011	U	0.0011	U				

Buck's Harbor, Machiasport, ME
Contract No.: D /33-02-D-0006
Task Order: 0020
Chemistry Data Summary

SAMPLE ID		Rinse Blank PC		Rinse Blank PG		Sta A,B,C Composite		Sta D,E,F Composite	
SAMPLING DATE		04-28-04		04-28-04		04-28-04		04-28-04	
LAB SAMPLE ID		0404198-01		0404198-02		0404198-03		0404198-04	
	Units		Qual		Qual		Qual		Qual
BZ 52	µg/L	0.0011	U	0.0011	U				
BZ 66	µg/L	0.0011	U	0.0011	U				
BZ 87	µg/L	0.0011	U	0.0011	U				
BZ 101	µg/L	0.0011	U	0.0011	U				
BZ 105	µg/L	0.0011	U	0.0011	U				
BZ 118	µg/L	0.0011	U	0.0011	U				
BZ 128	µg/L	0.0011	U	0.0011	U				
BZ 138	µg/L	0.0011	U	0.0011	U				
BZ 153	µg/L	0.0011	U	0.0011	U				
BZ 170	µg/L	0.0011	U	0.0011	U				
BZ 180	µg/L	0.0011	U	0.0011	U				
BZ 183	µg/L	0.0011	U	0.0011	U				
BZ 184	µg/L	0.0011	U	0.0011	U				
BZ 187	µg/L	0.0011	U	0.0011	U				
BZ 195	µg/L	0.0011	U	0.0011	U				
BZ 206	µg/L	0.0011	U	0.0011	U				
BZ 209	µg/L	0.0011	U	0.0011	U				
Semi-Volatile Organics by 8270 - SIM									
Naphthalene	µg/Kg					26	U	30	U
Acenaphthylene	µg/Kg					26	U	30	U
Acenaphthene	µg/Kg					26	U	30	U
Fluorene	µg/Kg					26	U	30	U
Phenanthrene	µg/Kg					**31**		30	U
Anthracene	µg/Kg					26	U	30	U
Fluoranthene	µg/Kg					**51**		**47**	
Pyrene	µg/Kg					**43**		**42**	
Benz[a]anthracene	µg/Kg					26	U	30	U
Benzo[b]fluoranthene	µg/Kg					26	U	30	U
Benzo[k]fluoranthene	µg/Kg					26	U	30	U
Benzo[e]pyrene	µg/Kg					26	U	30	U
Benzo[a]pyrene	µg/Kg					26	U	30	U
Indeno[1,2,3-cd]pyrene	µg/Kg					26	U	30	U
Dibenz[a,h]anthracene	µg/Kg					26	U	30	U
Benzo[g,h,i]perylene	µg/Kg					26	U	30	U
Naphthalene	ng/L	26	U	27	U				
Acenaphthylene	ng/L	26	U	27	U				
Acenaphthene	ng/L	26	U	27	U				
Fluorene	ng/L	26	U	27	U				
Phenanthrene	ng/L	26	U	27	U				
Anthracene	ng/L	26	U	27	U				
Fluoranthene	ng/L	26	U	27	U				

Buck's Harbor, Machiasport, ME
Contract No.: D /33-02-D-0006
Task Order: 0020
Chemistry Data Summary

SAMPLE ID		Rinse Blank PC		Rinse Blank PG		Sta A,B,C Composite		Sta D,E,F Composite	
SAMPLING DATE		04-28-04		04-28-04		04-28-04		04-28-04	
LAB SAMPLE ID		0404198-01		0404198-02		0404198-03		0404198-04	
	Units		Qual		Qual		Qual		Qual
Pyrene	ng/L	26	U	27	U				
Benz[a]anthracene	ng/L	26	U	27	U				
Benzo[b]fluoranthene	ng/L	26	U	27	U				
Benzo[k]fluoranthene	ng/L	26	U	27	U				
Benzo[e]pyrene	ng/L	26	U	27	U				
Benzo[a]pyrene	ng/L	26	U	27	U				
Indeno[1,2,3-cd]pyrene	ng/L	26	U	27	U				
Dibenz[a,h]anthracene	ng/L	26	U	27	U				
Benzo[g,h,i]perylene	ng/L	26	U	27	U				
Inorganics									
Total Organic Carbon (Run 1)	%					**0.91**		**1.3**	
Total Organic Carbon (Run 2)	%					**0.86**		**1.2**	
Percent Moisture	%					**35**		**42**	
Water Content	%					**53**		**71**	

Buck's Harbor, Machiasport, ME
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Task Order: 0020
Chemistry Data Summary

SAMPLE ID		Sta G,H,I Composite		Sta J,K,L Composite		Ref. 1		Ref. 2	
SAMPLING DATE		04-28-04		04-28-04		04-28-04		04-28-04	
LAB SAMPLE ID		0404198-05		0404198-06		0404198-07		0404198-08	
	Units		Qual		Qual		Qual		Qual
Metals									
Arsenic	µg/L					•			
Cadmium	µg/L								
Chromium	µg/L								
Copper	µg/L								
Lead	µg/L								
Mercury	µg/L								
Nickel	µg/L								
Zinc	µg/L								
Arsenic	mg/Kg	**4.5**		**4.4**		**3.3**		**3.6**	
Cadmium	mg/Kg	**0.11**		**0.085**		**0.040**		**0.038**	
Chromium	mg/Kg	**14**		**13**		**16**		**16**	
Copper	mg/Kg	**8.7**		**8.4**		**6.6**		**6.2**	
Lead	mg/Kg	**8.2**		**7.4**		**9.8**		**9.4**	
Mercury	mg/Kg	**0.011**		**0.0095**		0.0087	U	0.0080	U
Nickel	mg/Kg	**11**		**11**		**15**		**14**	
Zinc	mg/Kg	**32**		**32**		**37**		**37**	
Pesticides and PCB Congeners by GC/ECD									
Aldrin	µg/Kg	0.94	U	0.98	U	1.0	U	1.1	U
alpha-Chlordane	µg/Kg	0.94	U	0.98	U	1.0	U	1.1	U
gamma-BHC	µg/Kg	0.94	U	0.98	U	1.0	U	1.1	U
gamma-Chlordane	µg/Kg	0.94	U	0.98	U	1.0	U	1.1	U
4,4'-DDD	µg/Kg	0.94	U	0.98	U	1.0	U	1.1	U
4,4'-DDE	µg/Kg	0.94	U	0.98	U	1.0	U	1.1	U
4,4'-DDT	µg/Kg	0.94	U	0.98	U	1.0	U	1.1	U
Dieldrin	µg/Kg	0.94	U	0.98	U	1.0	U	1.1	U
Endosulfan I	µg/Kg	0.94	U	0.98	U	1.0	U	1.1	U
Endosulfan II	µg/Kg	0.94	U	0.98	U	1.0	U	1.1	U
Endosulfan sulfate	µg/Kg	0.94	U	0.98	U	1.0	U	1.1	U
Endrin	µg/Kg	0.94	U	0.98	U	1.0	U	1.1	U
Endrin aldehyde	µg/Kg	0.94	U	0.98	U	1.0	U	1.1	U
Heptachlor	µg/Kg	0.94	U	0.98	U	1.0	U	1.1	U
Heptachlor epoxide (B)	µg/Kg	0.94	U	0.98	U	1.0	U	1.1	U
Hexachlorobenzene	µg/Kg	0.94	U	0.98	U	1.0	U	1.1	U
Methoxychlor	µg/Kg	0.94	U	0.98	U	1.0	U	1.1	U
trans-Nonachlor	µg/Kg	0.94	U	0.98	U	1.0	U	1.1	U
Toxaphene	µg/Kg	94	U	98	U	100	U	110	U
BZ 8	µg/Kg	0.94	U	0.98	U	1.0	U	1.1	U
BZ 18	µg/Kg	0.94	U	0.98	U	1.0	U	1.1	U
BZ 28	µg/Kg	0.94	U	0.98	U	1.0	U	1.1	U
BZ 44	µg/Kg	0.94	U	0.98	U	1.0	U	1.1	U

Buck's Harbor, Machiasport, ME
Contract No.: D '33-02-D-0006
Task Order: 0020
Chemistry Data Summary

SAMPLE ID		Sta G,H,I Composite		Sta J,K,L Composite		Ref. 1		Ref. 2	
SAMPLING DATE		04-28-04		04-28-04		04-28-04		04-28-04	
LAB SAMPLE ID		0404198-05		0404198-06		0404198-07		0404198-08	
	Units		Qual		Qual		Qual		Qual
BZ 49	µg/Kg	0.94	U	0.98	U	1.0	U	1.1	U
BZ 52	µg/Kg	0.94	U	0.98	U	1.0	U	1.1	U
BZ 66	µg/Kg	0.94	U	0.98	U	1.0	U	1.1	U
BZ 87	µg/Kg	0.94	U	0.98	U	1.0	U	1.1	U
BZ 101	µg/Kg	0.94	U	0.98	U	1.0	U	1.1	U
BZ 105	µg/Kg	0.94	U	0.98	U	1.0	U	1.1	U
BZ 118	µg/Kg	0.94	U	0.98	U	1.0	U	1.1	U
BZ 128	µg/Kg	0.94	U	0.98	U	1.0	U	1.1	U
BZ 138	µg/Kg	0.94	U	0.98	U	1.0	U	1.1	U
BZ 153	µg/Kg	0.94	U	0.98	U	1.0	U	1.1	U
BZ 170	µg/Kg	0.94	U	0.98	U	1.0	U	1.1	U
BZ 180	µg/Kg	0.94	U	0.98	U	1.0	U	1.1	U
BZ 183	µg/Kg	0.94	U	0.98	U	1.0	U	1.1	U
BZ 184	µg/Kg	0.94	U	0.98	U	1.0	U	1.1	U
BZ 187	µg/Kg	0.94	U	0.98	U	1.0	U	1.1	U
BZ 195	µg/Kg	0.94	U	0.98	U	1.0	U	1.1	U
BZ 206	µg/Kg	0.94	U	0.98	U	1.0	U	1.1	U
BZ 209	µg/Kg	0.94	U	0.98	U	1.0	U	1.1	U
Aldrin	µg/L								
alpha-Chlordane	µg/L								
gamma-BHC	µg/L								
gamma-Chlordane	µg/L								
4,4'-DDD	µg/L								
4,4'-DDE	µg/L								
4,4'-DDT	µg/L								
Dieldrin	µg/L								
Endosulfan I	µg/L								
Endosulfan II	µg/L								
Endosulfan sulfate	µg/L								
Endrin	µg/L								
Endrin aldehyde	µg/L								
Heptachlor	µg/L								
Heptachlor epoxide (B)	µg/L								
Hexachlorobenzene	µg/L								
Methoxychlor	µg/L								
trans-Nonachlor	µg/L								
Toxaphene	µg/L								
BZ 8	µg/L								
BZ 18	µg/L								
BZ 28	µg/L								
BZ 44	µg/L								
BZ 49	µg/L								

Buck's Harbor, Machiasport, ME
Contract No.: D [illegible]33-02-D-0006
Task Order: 0020
Chemistry Data Summary

SAMPLE ID		Sta G,H,I Composite		Sta J,K,L Composite		Ref. 1		Ref. 2	
SAMPLING DATE		04-28-04		04-28-04		04-28-04		04-28-04	
LAB SAMPLE ID		0404198-05		0404198-06		0404198-07		0404198-08	
	Units		Qual		Qual		Qual		Qual
BZ 52	µg/L								
BZ 66	µg/L								
BZ 87	µg/L								
BZ 101	µg/L								
BZ 105	µg/L								
BZ 118	µg/L								
BZ 128	µg/L								
BZ 138	µg/L								
BZ 153	µg/L								
BZ 170	µg/L								
BZ 180	µg/L								
BZ 183	µg/L								
BZ 184	µg/L								
BZ 187	µg/L								
BZ 195	µg/L								
BZ 206	µg/L								
BZ 209	µg/L								
Semi-Volatile Organics by 8270 - SIM									
Naphthalene	µg/Kg	24	U	25	U	25	U	26	U
Acenaphthylene	µg/Kg	24	U	25	U	25	U	26	U
Acenaphthene	µg/Kg	24	U	25	U	25	U	26	U
Fluorene	µg/Kg	24	U	25	U	25	U	26	U
Phenanthrene	µg/Kg	24	U	25	U	25	U	26	U
Anthracene	µg/Kg	24	U	25	U	25	U	26	U
Fluoranthene	µg/Kg	24	U	39		25	U	26	U
Pyrene	µg/Kg	24	U	32		25	U	26	U
Benz[a]anthracene	µg/Kg	24	U	25	U	25	U	26	U
Benzo[b]fluoranthene	µg/Kg	24	U	25	U	25	U	26	U
Benzo[k]fluoranthene	µg/Kg	24	U	25	U	25	U	26	U
Benzo[e]pyrene	µg/Kg	24	U	25	U	25	U	26	U
Benzo[a]pyrene	µg/Kg	24	U	25	U	25	U	26	U
Indeno[1,2,3-cd]pyrene	µg/Kg	24	U	25	U	25	U	26	U
Dibenz[a,h]anthracene	µg/Kg	24	U	25	U	25	U	26	U
Benzo[g,h,i]perylene	µg/Kg	24	U	25	U	25	U	26	U
Naphthalene	ng/L								
Acenaphthylene	ng/L								
Acenaphthene	ng/L								
Fluorene	ng/L								
Phenanthrene	ng/L								
Anthracene	ng/L								
Fluoranthene	ng/L								

Buck's Harbor, Machiasport, ME
Contract No.: [illegible]V33-02-D-0006
Task Order: 0020
Chemistry Data Summary

SAMPLE ID		Sta G,H,I Composite		Sta J,K,L Composite		Ref. 1		Ref. 2	
SAMPLING DATE		04-28-04		04-28-04		04-28-04		04-28-04	
LAB SAMPLE ID		0404198-05		0404198-06		0404198-07		0404198-08	
	Units		Qual		Qual		Qual		Qual
Pyrene	ng/L								
Benz[a]anthracene	ng/L								
Benzo[b]fluoranthene	ng/L								
Benzo[k]fluoranthene	ng/L								
Benzo[e]pyrene	ng/L								
Benzo[a]pyrene	ng/L								
Indeno[1,2,3-cd]pyrene	ng/L								
Dibenz[a,h]anthracene	ng/L								
Benzo[g,h,i]perylene	ng/L								
Inorganics									
Total Organic Carbon (Run 1)	%	**0.61**		**0.54**		**0.41**		**0.53**	
Total Organic Carbon (Run 2)	%	**0.53**		**0.60**		**0.45**		**0.39**	
Percent Moisture	%	**30**		**31**		**36**		**37**	
Water Content	%	**42**		**44**		**54**		**56**	

Buck's Harbor, Machiasport, ME
Contract No.: [illegible] V33-02-D-0006
Task Order: 0020
Chemistry Data Summary

SAMPLE ID		Ref. 3	
SAMPLING DATE		04-28-04	
LAB SAMPLE ID		0404198-09	
	Units		Qual
Metals			
Arsenic	µg/L		
Cadmium	µg/L		
Chromium	µg/L		
Copper	µg/L		
Lead	µg/L		
Mercury	µg/L		
Nickel	µg/L		
Zinc	µg/L		
Arsenic	mg/Kg	**2.9**	
Cadmium	mg/Kg	**0.029**	
Chromium	mg/Kg	**14**	
Copper	mg/Kg	**5.8**	
Lead	mg/Kg	**8.4**	
Mercury	mg/Kg	0.0079	U
Nickel	mg/Kg	**13**	
Zinc	mg/Kg	**34**	
Pesticides and PCB Congeners by GC/ECD			
Aldrin	µg/Kg	0.96	U
alpha-Chlordane	µg/Kg	0.96	U
gamma-BHC	µg/Kg	0.96	U
gamma-Chlordane	µg/Kg	0.96	U
4,4'-DDD	µg/Kg	0.96	U
4,4'-DDE	µg/Kg	0.96	U
4,4'-DDT	µg/Kg	0.96	U
Dieldrin	µg/Kg	0.96	U
Endosulfan I	µg/Kg	0.96	U
Endosulfan II	µg/Kg	0.96	U
Endosulfan sulfate	µg/Kg	0.96	U
Endrin	µg/Kg	0.96	U
Endrin aldehyde	µg/Kg	0.96	U
Heptachlor	µg/Kg	0.96	U
Heptachlor epoxide (B)	µg/Kg	0.96	U
Hexachlorobenzene	µg/Kg	0.96	U
Methoxychlor	µg/Kg	0.96	U
trans-Nonachlor	µg/Kg	0.96	U
Toxaphene	µg/Kg	96	U
BZ 8	µg/Kg	0.96	U
BZ 18	µg/Kg	0.96	U
BZ 28	µg/Kg	0.96	U
BZ 44	µg/Kg	0.96	U

SAMPLE ID		Ref. 3	
SAMPLING DATE		04-28-04	
LAB SAMPLE ID		0404198-09	
	Units		Qual
BZ 49	µg/Kg	0.96	U
BZ 52	µg/Kg	0.96	U
BZ 66	µg/Kg	0.96	U
BZ 87	µg/Kg	0.96	U
BZ 101	µg/Kg	0.96	U
BZ 105	µg/Kg	0.96	U
BZ 118	µg/Kg	0.96	U
BZ 128	µg/Kg	0.96	U
BZ 138	µg/Kg	0.96	U
BZ 153	µg/Kg	0.96	U
BZ 170	µg/Kg	0.96	U
BZ 180	µg/Kg	0.96	U
BZ 183	µg/Kg	0.96	U
BZ 184	µg/Kg	0.96	U
BZ 187	µg/Kg	0.96	U
BZ 195	µg/Kg	0.96	U
BZ 206	µg/Kg	0.96	U
BZ 209	µg/Kg	0.96	U
Aldrin	µg/L		
alpha-Chlordane	µg/L		
gamma-BHC	µg/L		
gamma-Chlordane	µg/L		
4,4'-DDD	µg/L		
4,4'-DDE	µg/L		
4,4'-DDT	µg/L		
Dieldrin	µg/L		
Endosulfan I	µg/L		
Endosulfan II	µg/L		
Endosulfan sulfate	µg/L		
Endrin	µg/L		
Endrin aldehyde	µg/L		
Heptachlor	µg/L		
Heptachlor epoxide (B)	µg/L		
Hexachlorobenzene	µg/L		
Methoxychlor	µg/L		
trans-Nonachlor	µg/L		
Toxaphene	µg/L		
BZ 8	µg/L		
BZ 18	µg/L		
BZ 28	µg/L		
BZ 44	µg/L		
BZ 49	µg/L		

Buck's Harbor, Machiasport, ME
Contract No.: D /33-02-D-0006
Task Order: 0020
Chemistry Data Summary

SAMPLE ID		Ref. 3	
SAMPLING DATE		04-28-04	
LAB SAMPLE ID		0404198-09	
	Units		Qual
BZ 52	µg/L		
BZ 66	µg/L		
BZ 87	µg/L		
BZ 101	µg/L		
BZ 105	µg/L		
BZ 118	µg/L		
BZ 128	µg/L		
BZ 138	µg/L		
BZ 153	µg/L		
BZ 170	µg/L		
BZ 180	µg/L		
BZ 183	µg/L		
BZ 184	µg/L		
BZ 187	µg/L		
BZ 195	µg/L		
BZ 206	µg/L		
BZ 209	µg/L		
Semi-Volatile Organics by 8270 - SIM			
Naphthalene	µg/Kg	24	U
Acenaphthylene	µg/Kg	24	U
Acenaphthene	µg/Kg	24	U
Fluorene	µg/Kg	24	U
Phenanthrene	µg/Kg	24	U
Anthracene	µg/Kg	24	U
Fluoranthene	µg/Kg	24	U
Pyrene	µg/Kg	24	U
Benz[a]anthracene	µg/Kg	24	U
Benzo[b]fluoranthene	µg/Kg	24	U
Benzo[k]fluoranthene	µg/Kg	24	U
Benzo[e]pyrene	µg/Kg	24	U
Benzo[a]pyrene	µg/Kg	24	U
Indeno[1,2,3-cd]pyrene	µg/Kg	24	U
Dibenz[a,h]anthracene	µg/Kg	24	U
Benzo[g,h,i]perylene	µg/Kg	24	U
Naphthalene	ng/L		
Acenaphthylene	ng/L		
Acenaphthene	ng/L		
Fluorene	ng/L		
Phenanthrene	ng/L		
Anthracene	ng/L		
Fluoranthene	ng/L		

SAMPLE ID		Ref. 3	
SAMPLING DATE		04-28-04	
LAB SAMPLE ID		0404198-09	
	Units		Qual
Pyrene	ng/L		
Benz[a]anthracene	ng/L		
Benzo[b]fluoranthene	ng/L		
Benzo[k]fluoranthene	ng/L		
Benzo[e]pyrene	ng/L		
Benzo[a]pyrene	ng/L		
Indeno[1,2,3-cd]pyrene	ng/L		
Dibenz[a,h]anthracene	ng/L		
Benzo[g,h,i]perylene	ng/L		
Inorganics			
Total Organic Carbon (Run 1)	%	**0.35**	
Total Organic Carbon (Run 2)	%	**0.37**	
Percent Moisture	%	**33**	
Water Content	%	**49**	

EA - APPENDIX B

SUITABILITY DETERMINATION FOR DREDGED MATERIAL DISPOSAL

CENAE-R-PT (1145-2-303B) 3 February 2005

MEMORANDUM THRU

Ruth M. Ladd, Chief, Policy Analysis and Technical Support Branch

FOR: Stephen Dunbar, Project Manager, CENAE-EP-P

SUBJECT: Suitability Determination for Buck's Harbor Federal Navigation Project, Machiasport, Maine, Application Number 2003-02323.

1. **Project Description:**

The CENAE is proposing to dredge a channel and two anchorages with an area of approximately 25.8 acres in Bucks Harbor, producing a volume of approximately 34,000 to 66,000 cu. yds. of material. This material is proposed to be mechanically dredged and disposed at a formerly used disposal site in Machias Bay. This area was last dredged 29 years ago.

2. **Summary:**

Based on an evaluation of the data that characterize the material proposed to be dredged, this memorandum addresses the suitability of that material for disposal as proposed in accordance with applicable regulations. The Marine Analysis Section (MAS) finds that the data provide sufficient information to satisfy the evaluation and testing requirements of the appropriate regulations. MAS finds that the sediment is suitable for disposal as proposed.

3. **Regulations governing the determination of the suitability of dredged material for open-water disposal:**

The disposal of dredged material in Machias Bay is regulated under Section 404 of the Clean Water Act (CWA). Subpart G of the Section 404(b)(1) guidelines (40 CFR Section 230.60 and 230.61) describes the procedures for determining the suitability of this material for open-water disposal, including any relevant testing that may be required.

40 CFR 230.60 General Evaluation of Dredged or Fill Material

(a) Further testing was necessary as it could not be determined with the available information that the sediment was a carrier of contaminants.

(b) This subsection states that the site should be evaluated to determine whether it is sufficiently removed from sources of pollution. These factors include records of spills or potential routes of contamination, like outfall pipes.

The harbormaster has stated that there have been no recent spills or outfalls in the vicinity of this project.

(c) This subsection states that further testing may not be necessary if certain conditions and circumstances make it unlikely that the dredged material would degrade the disposal site. For the project to meet this exclusion, the material to be dredged and the material at the disposal site must be adjacent to each other and composed of the same materials and subject to the same sources of contaminants. As the project site is not adjacent to the disposal site, this exclusion does not apply to this project. Further testing was therefore required.

(d) This subsection states that further testing may not be necessary if the material to be dredged is constrained, both to reduce contamination within the disposal site and to prevent transport of contaminants beyond the boundaries of the disposal site. As such constraints in handling are not proposed, this subsection does not apply.

40 CFR 230.61 Chemical, Biological and Physical Evaluation and Testing

(a) This subsection describes the purpose of Part 230.61 and does not give any criteria for the evaluation of sediments.

(b) This subsection states that dredged material may be excluded from testing for water column effects and benthic bioassays if it is determined, by evaluation under 40 CFR Part 230.60, that the likelihood of contamination is acceptably low. Such testing is not needed as it was determined, on the basis of evaluation under Part 230.61(c), that the likelihood of contamination is low.

(c) This subsection states that an inventory of the concentrations of the contaminants of concern would aid in an environmental assessment of the impact of their disposal on the designated disposal site. Such an inventory was performed at the dredge site. See Section 4 below for description of the data results. Based upon this data, I find the sediment suitable for disposal as proposed.

CENAE and the federal agencies did not think an analysis of biological community structure was needed for this project.

(d) This subsection states the importance of the disposal of dredged materials on the characteristics of the physical substrate. MAS determined that the likelihood of physical effects from the disposal of the dredged material at the disposal site should be minimal. Although some benthic marine organisms will be buried by the disposal of the project materials, the disposal

site should be rapidly re-colonized.

4. **Sampling and Testing:**

A sampling plan for this project was prepared on 16 December 2003. The plan called for 12 cores to be taken from the project area and 3 from the proposed disposal site. On 21 May 2004, the MAS created a compositing plan for the sediment chemistry tests using grain size and core log data submitted by the applicant. Bulk sediment chemistry analyses were conducted on 4 composite samples from the project area and 3 individual cores from the disposal area.

The data from the disposal site was used to produce means and standard deviations for each analyte. These were used as the reference area values in the attached spreadsheet. Note that none of the PAHs, PCBs or the metal mercury were detected in any sample above their respective DLs. The statistics for these analytes were generated using ½ of the DLs as values.

Examination of the bulk chemistry results shows that the concentrations of the metals in the project sediments are below or near the Machias Bay reference values (see the normalized pollutant concentration spreadsheets). Those project site values that are above the reference values are none the less still very low concentrations for these analytes.

In all of the project sediment samples, the concentrations of PAH's in the project sediments are below or near the disposal site reference values. Many of the PAHs were not detected in the project sediment samples. Of those PAHs that were detected in the project site sediments, all were very low concentrations even though greater than the reference values.

For PCB's and pesticides, the contaminant concentrations in the project fall near or below the analytical detection limits in all of the project sediment samples tested. The detection limits for the project sediments are similar to those for the reference sediments.

5. **Conclusions:**

These sediments are suitable for unconfined open water disposal at the Machias Bay disposal site.

6. Copies of the above mentioned data and of the draft suitability determination were sent to the State DEP, US EPA, US F&WS and US NMFS for their review. The EPA responded to say that they concur with the determination. No responses were received from the other agencies within the 10-day response period so we can assume their concurrence.

7. If you have any questions, please contact me at (978) 318-8660 or at Phillip.W.Nimeskern@usace.army.mil.

Phillip W. Nimeskern
PHILLIP W. NIMESKERN
Project Manager,
Marine Analysis Section

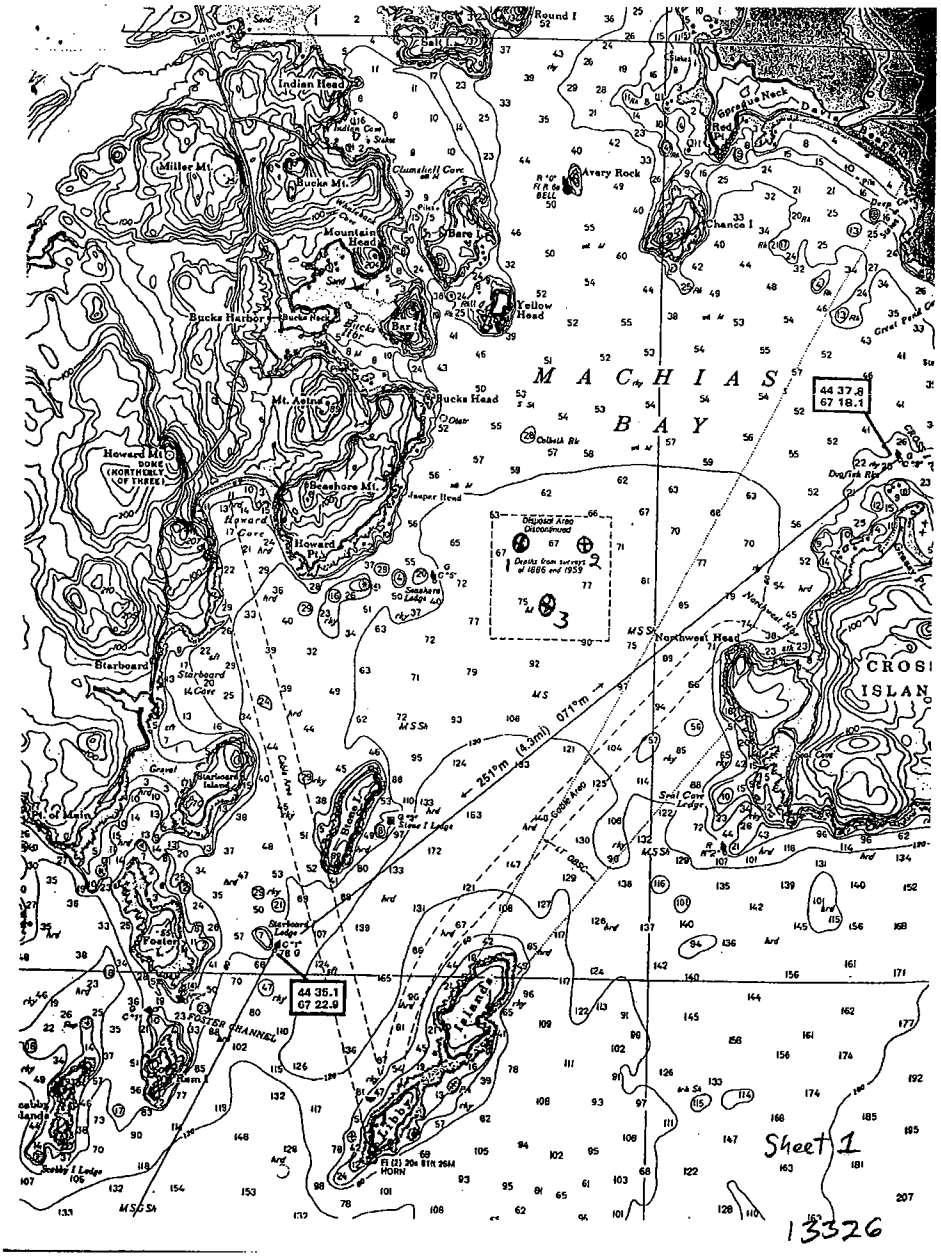
Contaminant concentrations

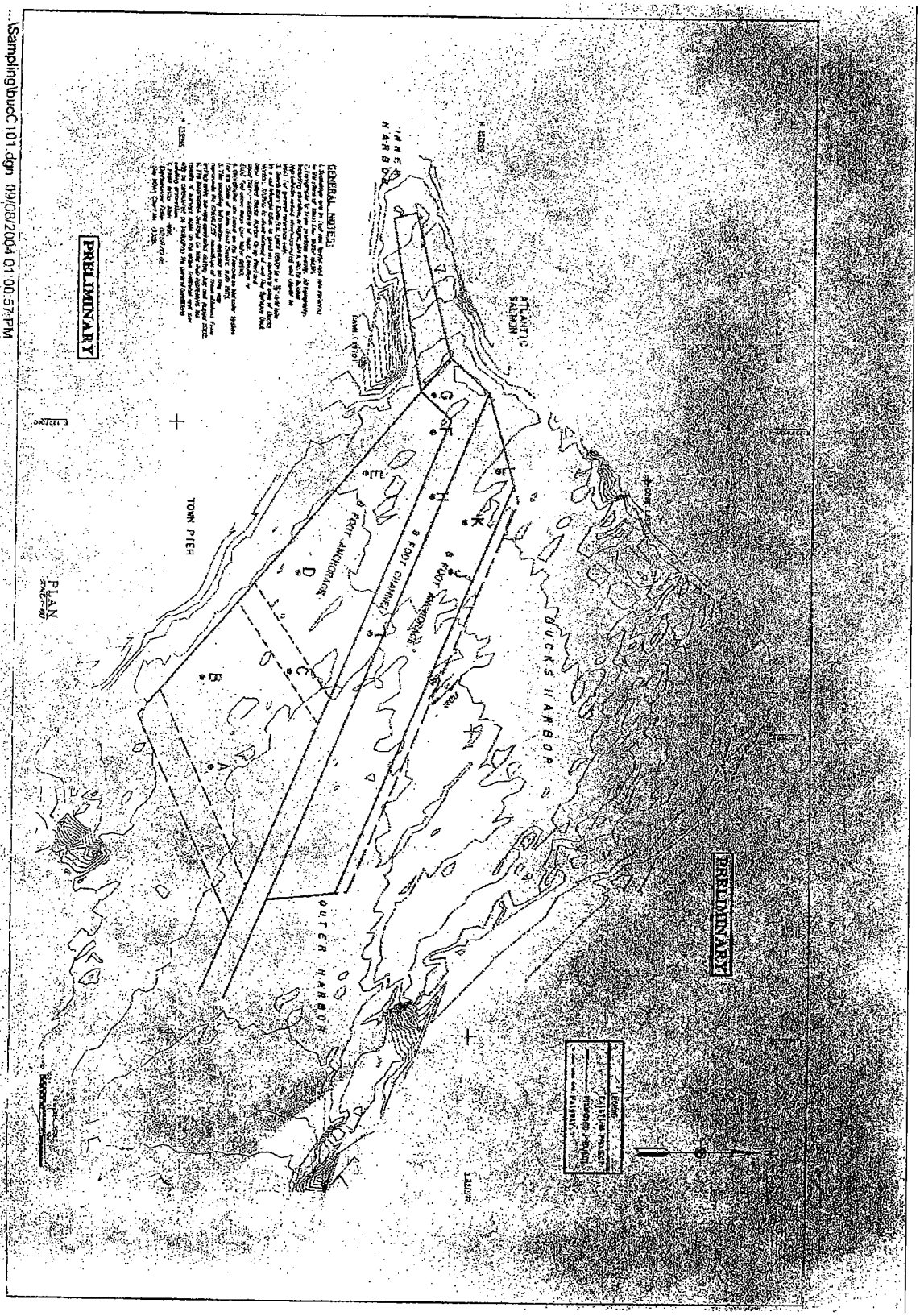
Buck's Harbor FNP

		Composite ABC Raw Data	Composite DEF Raw Data	Composite GHI Raw Data	Composite JKL Raw Data
METALS (ppm)					
Arsenic	3.97	5	6.3	4.5	4.4
Cadmium	0.047	0.11	0.12	0.11	0.085
Chromium	17.64	16	18	14	13
Copper	7.00	11	19	8.7	8.4
Lead	10.64	11	15	8.2	7.4
Mercury	0.0045	0.014	0.017	0.011	0.0095
Nickel	16.00	14	16	11	11
Zinc	39.46	40	48	32	32
% fines	72.85	98.3	99.4	94.8	93.5
PAHs (ppb)					
Naphthalene	13.5	13	15	12	12.5
Acenaphthylene	13.5	13	15	12	12.5
Acenaphthene	13.5	13	15	12	12.5
Fluorene	13.5	13	15	12	12.5
Phenanthrene	13.5	31	15	12	12.5
Anthracene	13.5	13	15	12	12.5
Fluoranthene	13.5	51	47	12	12.5
Pyrene	13.5	43	42	12	12.5
Benzo(a)anthracene	13.5	13	15	12	12.5
Chrysene					
Benzo(b)fluoranthenes	13.5	13	15	12	12.5
Benzo(k)fluoranthenes	13.5	13	15	12	12.5
Benzo(e)pyrene	13.5	13	15	12	12.5
Benzo(a)pyrene	13.5	13	15	12	12.5
Ideno(123-cd)pyrene	13.5	13	15	12	12.5
Dibenzo(a,h)anthracene	13.5	13	15	12	12.5
Benzo(g,h,i)perylene	13.5	13	15	12	12.5

Sum of PAH's		216.0	294	299	192	200
% TOC (mean, n=2)		0.52	0.885 _	1.25 _	0.57 _	0.57 _
% Moisture		39.50	35 __	42 _	30 __	31 __
Water Content (%)		60.21	53 __	71 _	42 __	44 __
PCBS (ppb)						
2,4' diCB	8	0.58	0.55 __	0.6 _	0.5 __	0.55 __
2,2',5 triCB	18	0.58	0.55 __	0.6 _	0.5 __	0.55 __
2,4,4' triCB	28	0.58	0.55 __	0.6 _	0.5 __	0.55 __
2,2',3,5' tetraCB	44	0.58	0.55 __	0.6 _	0.5 __	0.55 __
2,2',4',5 tetraCB	49	0.58	0.55 __	0.6 _	0.5 __	0.55 __
2,2',5,5' tetraCB	52	0.58	0.55 __	0.6 _	0.5 __	0.55 __
2,3',4,4' tetraCB	66	0.58	0.55 __	0.6 _	0.5 __	0.55 __
2,2',3,4,5' pentaCB	87	0.58	0.55 __	0.6 _	0.5 __	0.55 __
2,2',4,5,5' pentaCB	101	0.58	0.55 __	0.6 _	0.5 __	0.55 __
2,3,3',4,4' pentaCB	105	0.58	0.55 __	0.6 _	0.5 __	0.55 __
2,3',4,4',5 pentaCB	118	0.58	0.55 __	0.6 _	0.5 __	0.55 __
2,3,3',4,4' pentaCB	128	0.58	0.55 __	0.6 _	0.5 __	0.55 __
2,2',3,4,4',5' hexaCB	138	0.58	0.55 __	0.6 _	0.5 __	0.55 __
2,2',4,4',5,5' hexaCB	153	0.58	0.55 __	0.6 _	0.5 __	0.55 __
2,2',3,3',4,4',5 heptaCB	170	0.58	0.55 __	0.6 _	0.5 __	0.55 __
2,2',3,4,4',5,5' heptaCB	180	0.58	0.55 __	0.6 _	0.5 __	0.55 __
2,2',3,4,4',5',6 heptaCB	183	0.58	0.55 __	0.6 _	0.5 __	0.55 __
2,2',3,4,4',6,6' heptaCB	184	0.58	0.55 __	0.6 _	0.5 __	0.55 __
2,2', 3,4',5,5',6 heptaCB	187	0.58	0.55 __	0.6 _	0.5 __	0.55 __
2,2',3,3'4,4',5,6 octaCB	195	0.58	0.55 __	0.6 _	0.5 __	0.55 __
2,2',3,3',4,4',5,5',6 nonaCB	206	0.58	0.55 __	0.6 _	0.5 __	0.55 __
2,2',3,3',4,4',5,5',6,6' decaCB	209	0.58	0.55 __	0.6 _	0.5 __	0.55 __
Total PCBs		12.81				
Sum of Congeners		20.96	19.80 __	21.60 _	18.00 __	19.80 __
PESTICIDES (ppb)						
aldrin		0.58	0.55 __	0.6 _	0.47 __	0.49 __
alpha chlordane		0.58	0.55 __	0.6 _	0.47 __	0.49 __
gamma-BHC (lindane)		0.58	0.55 __	0.6 _	0.47 __	0.49 __

gamma chlordane	0.58	0.55	0.6	0.47	0.49
4,4'-DDD	0.58	0.55	0.6	0.47	0.49
4,4'-DDE	0.58	0.55	0.6	0.47	0.49
4,4'-DDT	0.58	0.55	0.6	0.47	0.49
dieldrin	0.58	0.55	0.6	0.47	0.49
endosulfan I	0.58	0.55	0.6	0.47	0.49
endosulfan II	0.58	0.55	0.6	0.47	0.49
endosulfan sulfate	0.58	0.55	0.6	0.47	0.49
endrin	0.58	0.55	0.6	0.47	0.49
endrin aldehyde	0.58	0.55	0.6	0.47	0.49
heptachlor	0.58	0.55	0.6	0.47	0.49
heptachlor epoxide	0.58	0.55	0.6	0.47	0.49
hexaclorobenzene	0.58	0.55	0.6	0.47	0.49
methoxychlor	0.58	0.55	0.6	0.47	0.49
trans-nonachlor	0.58	0.55	0.6	0.47	0.49
toxaphene	58.21	55	60	47	49
alpha-BHC					
beta-BHC					
delta-BHC					
endrin ketone					
Total pesticides	68.69				


MACHIAS BAY
Indian Head
Miller Mt.
Bucks Mt.
Mountain Head
Bare I.
Yellow Head
Bucks Harbor
Bucks Head
Howard Mt.
Howard Pt.
Starboard
Foster I.
Foster Channel
Avery Rock
Chance I.
Northwest Head
Sheet 1
13326


..\Sampling\buc101.dgn 09/08/2004 01:00:57 PM
PRELIMINARY
PLAN
TOWN PIER
ATLANTIC SALMON
BUCKS HARBOR
OUTER HARBOR
PRELIMINARY

EA - APPENDIX C

CORRESPONDENCE

December 12, 2003

Engineering/Planning Division
Evaluation Branch

Addressee

Dear X:

The U.S. Army Corps of Engineers (USACE), New England District (NAE), would like to invite a member of your staff to a coordinated site visit in Machiasport, Maine on January 14, 2003 (details below). We will be meeting to discuss a proposed anchorage expansion to the existing Federal Navigation Project (FNP) in Bucks Harbor.

The existing FNP at Buck's Harbor was authorized in 1972 and constructed in 1974. The existing project consists of 11 acres of anchorage and a 2-acre maneuvering fairway for access through the anchorage and to adjacent piers. The anchorage and fairway are authorized to a depth of 8 feet below mean low water (MLW). Currently, several problems exist for the Buck's Harbor fleet. The most severe problem is overcrowding in the harbor due to a lack of deep-water anchorage. Overcrowding causes a lack of access to the area originally provided for as a fairway because the area has been consumed by moorings. No clear access channel is currently obvious. Congestion in the anchorage area also contributes to vessel-to-vessel strikes as they swing about their moorings. Additionally, the lack of deep-water anchorage has forced many vessels to anchor in areas without adequate depths, which increases the potential for groundings, wave damage, and exposure to hazardous storm conditions. These problems inhibit the efficiency of operation and restrict the potential growth of the Buck's Harbor fleet.

The Corps is investigating the feasibility of adding approximately 12 acres to the existing Federal project. Alternative configurations, depths, dredging methods, and disposal areas will be examined. Enclosed are maps of the project area (Attachments 1 & 2). Attachment 2 includes an outline of the existing FNP and the approximate limits of expansion. We will be requesting written preliminary comments on the proposed project (which will be described during the site visit) from your agency within 30 days after the site visit. Comments should include any concerns that should be addressed during the planning of the proposed project (for example: threatened or endangered species; unique resources; material compatibility; etc.). Comments in support of the project as presented are also requested.

We will meet at 9:00 a.m. on January 14, 2003 at the Machiasport Town Hall. Directions to the Town Hall from Machias are enclosed with this letter. If there is severe weather on January 14 we will reschedule to a later date via email. We look forward to your contribution towards this project. Any questions or comments can be directed to Mr. Steve

Dunbar, project manager, at (978) 318-8381 (stephen.w.dunbar@usace.army.mil) or Mr. Todd Randall, marine ecologist, at (978) 318-8518 (todd.a.randall@usace.army.mil).

Sincerely,

John R. Kennelly
Chief, Planning Branch

Enclosures

Same Letter Sent To:

Ms. Wende S. Mahaney
U.S. Fish and Wildlife Service
1168 Main Street
Old Town, ME 04468

Mr. Sean McDermott
NOAA Fisheries
One Blackburn Drive
Gloucester, MA 01930

Mr. Jeff Murphy
NOAA Fisheries
Maine Field Office
P.O. Box 190
31 Main Street
Orono, ME 04473

Ms. Olga Guza
US Environmental Protection Agency, Region I
J.F.K. Federal Building
Boston, MA 02203

Ms. Stacie Beyer
Maine Department of Environmental Protection
106 Hogan Road
Bangor, ME 04401

Mr. Brian Swan
Maine Department of Marine Resources
State House Station 21
Augusta, ME 04333

Ms. Kathleen Leyden
Maine State Planning Office
38 State House Station
Augusta, ME 04333

United States Department of the Interior

FISH AND WILDLIFE SERVICE

New England Field Office
70 Commercial Street, Suite 300
Concord, New Hampshire 03301-5087

REF: Bucks Harbor Federal Navigation Project, Machiasport, Maine February 9, 2004

Mr. Stephen Dunbar
Engineering/Planning Division
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

Dear Mr. Dunbar:

This letter is in response to your request at the January 14, 2004 site visit for the federal resource agencies to provide the Corps of Engineers (Corps) with preliminary comments regarding the proposed maintenance dredging and anchorage expansion at the Bucks Harbor Federal Navigation Project (FNP) in Machiasport, Maine. This letter provides the Fish and Wildlife Service's (Service) response pursuant to Section 7 of the Endangered Species Act (ESA), as amended (16 U.S.C. 1531-1543), and the Fish and Wildlife Coordination Act, as amended (16 U.S.C. 661-667d).

Endangered Species Act Comments

The federally-threatened bald eagle (*Haliaeetus leucocephalus*) currently nests on the northern end of Bar Island in Bucks Harbor. The proposed work at the Bucks Harbor FNP is more than ¼ mile away from this eagle nest. This amount of separation would likely provide an adequate buffer from any disturbances that could be associated with dredging activity. Furthermore, if the proposed work is conducted outside of the bald eagle nesting season (generally from March 1 through August 31 of any given year), additional impacts can be avoided. As project plans continue to develop, the Corps should continue to coordinate with the Service under Section 7 of the ESA to determine whether the proposed work may affect the bald eagle. Please contact Mark McCollough of our Maine Field Office at 207-827-5938, extension 12, for further coordination in this regard.

The proposed project is also within the range of the federally-endangered Atlantic salmon (*Salmo salar*). In November 2000, the Fish and Wildlife Service and the National Marine Fisheries Service (NOAA Fisheries) jointly listed the Gulf of Maine Distinct Population Segment (DPS) of Atlantic salmon under the ESA. The Gulf of Maine DPS includes all naturally reproducing remnant populations of Atlantic salmon from the Kennebec River downstream of the former Edwards Dam site northward to the mouth of the St. Croix River. The DPS includes salmon populations using the Dennys, East Machias, Machias, Pleasant, Narraguagus, Sheepscot,

and Ducktrap Rivers and Cove Brook. Both juvenile and adult Atlantic salmon migrate through Machias Bay on their way to or from the Machias and East Machias Rivers. A time-of-year restriction on dredging and disposal activities may be needed to protect migrating salmon. Because the proposed work at the Bucks Harbor FNP is located in the marine environment, NOAA Fisheries will have the lead on any Section 7 consultation related to Atlantic salmon. Please contact Jeff Murphy at the NOAA Fisheries office in Orono, Maine (207-866-7379) for further coordination.

Fish and Wildlife Coordination Act Comments

The Corps is proposing to conduct maintenance dredging in the existing anchorage and to expand the size of the anchorage to accommodate a growing fleet of boats using the harbor. The Corps is also considering a request from the Town of Machiasport to provide an entrance channel into the inner harbor area where the beach is currently used for launching skiffs.

As discussed at the January 14, 2004 meeting, the town's proposal for new dredging into the inner harbor area is of particular concern to the Service, because approximately two-thirds of this area is intertidal habitat. This area is occupied by extensive blue mussel beds interspersed with pools containing eelgrass. The Service recommends that more detailed information be provided related to the need for this dredging, as well as an examination of alternatives for better accommodating the launching of small boats during a greater portion of the tide cycle. If the Corps determines that this portion of the project is warranted, we recommend the following: 1) a detailed description of the aquatic resources that would be affected by this new dredging; 2) an analysis of the anticipated impacts to these resources; and 3) a discussion of compensatory mitigation options for replacing the affected intertidal habitat.

The Corps should also work with the Town of Machiasport to gather accurate information related to the current and future needs of the fleet using this FNP. We understand that the town is now developing a harbor management plan, which we believe is a critical step for making efficient use of the harbor space and possibly avoiding, or at least minimizing, the need for new dredging in both intertidal and subtidal habitats.

Because of the known presence of eelgrass in the inner harbor area, we recommend that the Corps conduct an eelgrass survey within both the existing anchorage area and the proposed anchorage expansion area, either by remote camera or diver survey.

Thank you for the opportunity to provide these comments early in the Corps' planning process. We look forward to continued coordination with you as project planning proceeds. If you have any questions, please contact Wende Mahaney in our Maine office at 207-827-5938, extension 20.

Sincerely yours,

Michael J. Bartlett
Supervisor
New England Field Office

cc: Todd Randall, ACOE – Concord, MA
Sean McDermott, NOAA Fisheries - Gloucester, MA
Jeff Murphy, NOAA Fisheries – Orono, ME
Stacie Beyer, MEDEP – Bangor, ME
Brian Swan, MEDMR – Hallowell, ME
Reading File
ES: WMahaney:2-9-04:207-827-5938

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
NORTHEAST REGION
One Blackburn Drive
Gloucester, MA 01930-2298

FEB 13 2004

Todd Randall
Civil/Military Project Management Branch
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

Re: **Bucks Harbor Anchorage Expansion Project**

Dear Mr. Randall:

Thank you for notifying the National Marine Fisheries Service (NOAA Fisheries) regarding the proposed anchorage maintenance and expansion project in Bucks Harbor, Maine. Project details were provided during a site visit and coordination meeting on January 14, 2004. The proposed project will dredge approximately 25,000 cubic yards of material to expand the –6 feet MLW anchorage area, and approximately 50,000 cubic yards of dredge material for maintenance of the existing –8 feet MLW channel and –8 feet MLW anchorage area. Dredge material resulting from the one-foot over depth dredge allowance to accommodate equipment limitations is included in this estimate. The Army Corps of Engineers (ACOE) proposes to use the original site in Machias Bay to dispose of dredged materials. The project is expected to commence October 2006. The original proposal also requests an extension of the channel into the inner harbor to facilitate boat launching from Finn Beach.

General Comments

Bucks Harbor has a depth range from –2 feet MLW to approximately –10 feet MLW. Preliminary surveys by the ACOE indicate no eelgrass present and a substrate of silt and mud. The inner harbor is intertidal flats with ledges, sand, and mud. During the site visit to Finn Beach, eelgrass was observed in shallow pools, and mussels were noted in abundance along the shore and tide flats. This beach is comprised of compacted sand with ledge outcroppings. Local fishermen use Finn Beach to launch trailered boats into the narrow stretch between the inner and outer harbor, though boats can not be launched at all tides.

Vegetated shallows such as the eelgrass beds observed in the intertidal area at Finn Beach are defined as a "special aquatic site" under Section 404 (b)(1) Guidelines of the Clean Water Act due to their significant ecological value as finfish and shellfish nurseries, wave buffers, and sediment stabilizers. Eelgrass also plays an important role in nutrient cycling in coastal habitats. It is very efficient at absorbing and concentrating nutrients from the sea to support complex food webs. Eelgrass meadows can be long lived but when damaged by a disturbance, such as dredging, they are slow to recover.

It was conferred during the site visit that the mussel beds observed at Finn Beach and around the inner harbor were not previously present in this location, and may have been unintentionally transplanted through activities at the local aquaculture facility. Mussel beds can provide habitat for other marine organisms, stabilize shorelines, and reduce water turbidity; therefor these mussel beds should still be considered a valuable part of the habitat.

The intertidal zone is a limited area with high productivity and valuable habitat characteristics. Dredging in the intertidal zone would damage and eliminate eelgrass beds, cause water clarity problems, and smother living marine resources such as mussels. Efforts to avoid the damage of this valuable habitat should be considered in any project.

Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) requires federal agencies such as the ACOE to consult with the Secretary of Commerce regarding any action or proposed action authorized, funded, or undertaken by the agency that may adversely affect Essential Fish Habitat (EFH) identified under the MSFCMA. The EFH regulations, 50 CFR Section 600.920, outline that consultation procedure and further, enable federal agencies to use existing consultation/environmental review procedures to satisfy the MSFCMA consultation requirements in certain circumstances. The Clean Water Act Section 404 used by the ACOE for regulatory projects may be used to satisfy the consultation requirements of the MSFCMA.

Bucks Harbor is designated as Essential Fish Habitat under the MSFCMA for 16 federally managed species including all life stages of Atlantic cod (*Gadus morhua*), winter flounder (*Pseudopleuronectes americanus*), and Atlantic halibut (*Hippoglossus hippoglossus*). The Machias River is designated as a Habitat Area of Particular Concern (HAPC) for Atlantic salmon (*Salmo salar*) indicating that Bucks Harbor, where both juvenile and adult stages are found, may be important as part of the migration path for spawning salmon.

Portions of the proposed project, as discussed at the site visit, may have adverse effects on EFH. The intertidal dredging that would be required to extend the navigation channel to the inner bay to facilitate boat launching from Finn Beach will damage habitat that supports managed species, particularly the submerged aquatic vegetation. The presence of the eelgrass beds and mussel beds in the intertidal area indicates that there may be other critical habitat features in the project area. This supports the need for more detailed surveys of the entire project site to better understand habitat characteristics that may be adversely affected.

Based on information provided at the coordination meeting and site visit, NOAA Fisheries offers the following comments for further development of this project and for evaluation and incorporation into the EFH assessment:

- The extension of the navigation channel into the inner bay to facilitate boat launching from Finn Beach should be avoided. If an extension channel at Finn Beach is necessary, limiting the extension of the channel could minimize the impacts on

eelgrass and intertidal habitat. NOAA Fisheries would suggest that the channel extension be limited to –4 feet MLW with top of slope at this depth to avoid secondary impacts, such as erosion and slumping, on the intertidal area and shallow water habitat.

- Consider alternatives that encourage the use of Petterow Beach. Planning an extension of the navigation channel to facilitate launches at Petterow beach may require less dredging due to the deeper waters in this area, and may avoid disturbing eelgrass beds.

- Further delineate aquatic resources in the project area to better evaluate potential impacts on EFH. NOAA Fisheries is particularly concerned with distribution of eelgrass and shellfish beds. An eelgrass survey during the growing season and a benthic survey should be conducted.

- Dredging activities could impact various life stages of managed species in the project area, especially spawning adults, egg, and larval stages. Time of year restrictions on dredging activities should be used to accommodate these life stages for managed species. A work window of November 15 to April 15 of any year may be suitable and should be evaluated..

- Further consultation with NOAA Protected Resources Division may be required to satisfy Section 7 of Endangered Species Act requirements.

NOAA Fisheries will initiate consultation and provide Conservation Recommendations upon receipt of the EFH assessment. The required contents of an EFH Assessment include: 1) a description of the action; 2) an analysis of the potential adverse effects of the action on EFH and the managed species; 3) the ACOE's conclusions regarding the effects of the action on EFH; and 4) proposed mitigation, if applicable. Other information that should be contained in the EFH assessment, if appropriate, includes: 1) the results of additional on-site inspections to evaluate the habitat and site-specific effects; 2) the views of recognized experts on the habitat or the species that may be affected; 3) a review of pertinent literature and related information; and 4) an analysis of alternatives to the action that could avoid or minimize the adverse effects on EFH.

Conclusion

Bucks Harbor is designated EFH for several managed species, and portions of this project, as proposed, may have adverse effects on EFH. Comments in this letter are provided to address alternatives which will serve to avoid or minimize the adverse impacts on EFH.

NOAA Fisheries is primarily concerned with impacts on eelgrass and the intertidal dredging resulting from extending the channel into Finn Beach. Alternatives to this include limiting the channel extension to –4 feet MLW with top of slope at this depth, and encouraging the use of Petterow Beach as a launching site for fishermen. Detailed surveys are needed on the aquatic resources in the area, including eelgrass distribution, to

insure all aquatic resources have been considered. To avoid impacts on various life stages of managed species in the area, a work window of November 15 to April 15 of any year may be necessary; however, further consultation with NOAA Protected Resources Division will be required for this project. NOAA Fisheries appreciates the preliminary coordination on this project and the opportunity to visit the project site. We look forward to further coordination with you in the future. If you have any questions regarding this letter, please contact Marcy Scott at (978) 281-9108 or Sean McDermott at (978) 281-9113.

Sincerely,

Peter D. Colosi, Jr.
Assistant Regional Administrator
for Habitat Conservation

cc: Stacy Byers, Maine DEP, Augusta
Wende Mahaney, USFWS, Old Town, ME
Brian Swan, Maine DMR, Augusta, ME
Jeff Murphy, NERO
Mary Colligan, Julie Crocker, NOAA/PR
Patricia Kurkul, F/NE

file: Bucks Harbor Pre-App Comments.doc

Dunbar

March 19, 2004

Atwood/nak/537

Engineering/Planning Division
Evaluation Branch

Mr. Earle G. Shettleworth, Director
Maine Historic Preservation Commission
55 Capitol Street
Augusta, Maine 04333

Dear Mr. Shettleworth:

The U.S. Army Corps of Engineers, New England District (NAE), is preparing an Environmental Assessment for a proposed Navigation Improvement Project at Bucks Harbor, in Machiasport, Maine (Figure 1). We would like your comments on this proposed project.

A Corps of Engineers study in 1971 examined the feasibility of providing navigation improvements for the commercial fishing fleet in Bucks Harbor with the proposed improvements determined to be justified. As a consequence, a project was adopted in 1972 and constructed in 1974. This authorized Federal navigation project consists of 11 acres of anchorage dredged to eight (8) feet below mean low water. The constructed area is approximately 13 acres, allowing for a maneuvering fairway for access through the anchorage (Figure 1). At the time of construction, about 44 fishing vessels moored in Bucks Harbor. No other navigation improvements have been implemented.

In 1988, NAE completed a reconnaissance report investigating navigation difficulties affecting the commercial fishing fleet operations at the existing navigation project at Bucks Harbor. Problems noted were overcrowding due to a lack of deep water anchorage, no clear access channel as the area originally provided for a fairway has been consumed by moorings due to a great demand, and exposure to hazardous storm conditions entering the harbor from Machias Bay. The reconnaissance survey determined that improvements to the navigation project were economically justified and recommended further investigations. Based on hydrographic data obtained in 2002 and responses from commercial fishermen, NAE is now investigating the feasibility of adding approximately 12 acres to the existing federal project (Figure 1). The dredged material will be disposed of at the Machias Bay Disposal Site, which was previously used for the original navigation project at Bucks Harbor, constructed in 1974 (Figure 2).

This proposed project was coordinated with your office in 1987 and 1988 as part of the reconnaissance study. NAE determined that the proposed dredging and disposal of dredged material should have no effect on historic properties. Your office concurred with this determination in the enclosed correspondence dated March 10, 1988 and March 1, 1989.

The proposed project being investigated in the feasibility study is essentially the same as the anchorage and disposal site proposed in the reconnaissance report so we believe that the project should still have no effect on historic properties. We would appreciate your concurrence. NAE will also be coordinating this navigation project with Maine tribal representatives.

If you have any questions or comments, please contact Ms. Kate Atwood, NAE Archaeologist at (978) 318-8537.

Sincerely,

David L. Dulong, P.E.
Chief, Engineering/Planning Division

Enclosures

CF:
Mr. Ring
Ms. Atwood, Eng/Plng Files
✓Mr. Dunbar
Reading File

March 19, 2004

Atwood/nak/537

Engineering/Planning Division
Evaluation Branch

Mr. Barry Dana, Chief
Penobscot Indian Nation
Six River Road
Indian Island Reservation
Old Town, Maine 04468

Dear Chief Dana:

The U.S. Army Corps of Engineers, New England District (NAE), is preparing an Environmental Assessment for a proposed Navigation Improvement Project at Bucks Harbor, in Machiasport, Maine (Figure 1). We would like your comments on this proposed project.

A Corps of Engineers study in 1971 examined the feasibility of providing navigation improvements for the commercial fishing fleet in Bucks Harbor with the proposed improvements determined to be justified. As a consequence, a project was adopted in 1972 and constructed in 1974. This authorized Federal navigation project consists of 11 acres of anchorage dredged to eight (8) feet below mean low water. The constructed area is approximately 13 acres, allowing for a maneuvering fairway for access through the anchorage (Figure 1). At the time of construction, about 44 fishing vessels moored in Bucks Harbor. No other navigation improvements have been implemented.

In 1988, NAE completed a reconnaissance report investigating navigation difficulties affecting the commercial fishing fleet operations at the existing navigation project at Bucks Harbor. Problems noted were overcrowding due to a lack of deep water anchorage, no clear access channel as the area originally provided for a fairway has been consumed by moorings due to a great demand, and exposure to hazardous storm conditions entering the harbor from Machias Bay. The reconnaissance survey determined that improvements to the navigation project were economically justified and recommended further investigations. Based on hydrographic data obtained in 2002 and responses from commercial fishermen, NAE is now investigating the feasibility of adding approximately 12 acres to the existing federal project (Figure 1). The dredged material will be disposed of at the Machias Bay Disposal Site, which was previously used for the original navigation project at Bucks Harbor, constructed in 1974 (Figure 2).

We are currently consulting with the Maine State Historic Preservation Officer (ME SHPO) and the other Federally recognized tribes in Maine about this proposed project. This project was coordinated with the ME SHPO in 1987 and 1988 as part of the reconnaissance study. NAE determined that the proposed dredging and disposal of dredged material should have no effect on historic properties. The ME SHPO concurred with this determination in the

enclosed correspondence dated March 10, 1988 and March 1, 1989. The proposed project being investigated in the feasibility study is essentially the same as the anchorage and disposal site proposed in the reconnaissance report, so we believe the project should still have no effect on historic properties. We would appreciate your concurrence. If you have any concerns about this project, we would appreciate comments at your earliest convenience.

If you have any questions or comments, please contact Ms. Kate Atwood, NAE Archaeologist, at (978) 318-8537.

Sincerely,

David L. Dulong, P.E.
Chief, Engineering/Planning Division

Enclosures

Copy Furnished (with enclosures):

Mr. John Banks, Director of Natural Resources
Penobscot Indian Nation
Six River Road
Indian Island Reservation
Old Town, Maine 04468

SAME LETTER SENT TO:

Ms. Brenda Commander, Chief
Houlton Band of Maliseet Indians
Route 3 – Box 450
Houlton, Maine 04730

Copy Furnished (with enclosures):

Ms. Sharri Venno, Director of Environmental Planning
Houlton Band of Maliseet Indians
88 Bell Road
Houlton, Maine 04769

Mr. William Phillips, Chief
Aroostock Band of Micmacs
8 Northern Road
Presque Isle, Maine 04769

Copy Furnished (with enclosures):

Mr. Fred Corey, Environmental Director
Aroostock Band of Micmacs
8 Northern Road
Presque Isle, Maine 04769

Mr. Richard Stevens, Tribal Governor
Passamaquoddy Tribe of Indians
Indian Township Reservation
P.O. Box 301
Princeton, Maine 04668

Copy Furnished (with enclosures):

Mr. Donald Soctomah, Acting Tribal Historic Preservation Officer
Passamaquoddy Tribe of Indians
Indian TownshipReservation
P.O. Box 301
Princeton, Maine 04668

Mr. Richard Doyle, Tribal Governor
Passamaquoddy Tribe of Indians
Pleasant Point Reservation
P.O. Box 343
Perry, Maine 04667

Mr. Richard Stevens, Tribal Governor
Passamaquoddy Tribe of Indians
Indian Township Reservation
P.O. Box 301
Princeton, Maine 04668

CF:
Ms. Atwood
Mr. Ring
Mr. Dunbar
Reading File

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
NORTHEAST REGION
One Blackburn Drive
Gloucester, MA 01930-2298

APR 14 2008

John Kennelly
Chief of Planning
Engineering/Planning Division
Planning Branch
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

RE: Buck's Harbor Navigation Maintenance and Improvement project in Machiasport, ME

Dear Mr. Kennelly:

The National Marine Fisheries Service (NMFS) has reviewed the draft Environmental Assessment (EA) and supporting documentation provided by the Army Corps of Engineers (ACOE), which describes the proposed navigation and improvement project in Bucks Harbor, Machiasport, Maine. The proposed project would expand the existing anchorage and navigation channel by a total of 25.6 acres, and would include a combination of maintenance and improvement dredging to remove approximately 88,300 cubic yards of material by mechanical dredge, with disposal at Machias Bay Disposal site.

Currently, Buck's Harbor consists of 11 acres of anchorage and 2 acres of navigation channel, both at a depth of 8 feet. This expansion project would result in 13.5 acres of anchorage at a depth of 6 feet, 20.6 acres of anchorage at a depth of 8 feet, and a 1 acre turning basin adjacent to Finn's Beach on the west side of the harbor would also be 8 feet deep. In addition, an 80-foot-wide by 8-foot-deep access channel along the south side of the harbor ~~would require 4.1 acres.~~

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) and the Fish and Wildlife Coordination Act require federal agencies to consult with one another on projects such as this. Insofar as a project involves essential fish habitat (EFH), as this project does, this process is guided by the requirements of our EFH regulation at 50 CFR 600.905, which mandates the preparation of EFH assessments, and generally outlines each agency's obligations in the relevant consultation procedure. We offer the following comments and recommendations on this project pursuant to the above referenced regulatory process.

General Comments

Bucks Harbor is designated as EFH under the MSA for 16 federally managed species including all life stages of Atlantic cod (*Gadus morhua*), and winter flounder (*Pleuronectes americanus*). In addition, the Machias river is designated as a Habitat Area of Particular Concern (HAPC) for Atlantic salmon (*Salmo salar*). Bucks Harbor may be an important part of the migration pathway for spawning salmon.

There is some disagreement in the information provided regarding the expected work window for this project. The EA states in Section 1.2 that dredging and disposal activities would be limited to a period between November 1 and April 15. However, the EFH assessment (Section 4.2) also indicates that no dredging will occur between February and July in order to minimize adverse impacts on winter flounder eggs and larvae. In addition, Section 7.0 states that although blasting is not expected, if needed, it would be limited to a period between Octoberl and April 15, prior to previously stated work window. It is our understanding that the ACOE has agreed to amend this work window so all in-water work, including any possible blasting, will occur between November 8 and April 9 of any year, in order to avoid disturbing migratory patterns of Atlantic salmon. However, a time of year restriction to minimize adverse impacts on winter flounder spawning eggs and larvae has not been discussed.

During a site visit and pre-application meeting in January 2004, NMFS staff observed both eelgrass beds and mussel beds in the inner harbor near Finns Beach. The EA also indicates that mussel beds exist in the inner harbor in the vicinity of the proposed turning basin, but outside the proposed dredging footprint (Section 3.1.4.3). As noted in NMFS' previous comments regarding this project (February 13, 2004), the impacts of the proposed turning basin near Finns Beach could be minimized by limiting the top of the slope to - 4 feet below mean low water (MLW). Although the EA indicates that no dredging is planned in intertidal areas (section 3.1.4.3), the information provided in the EA does not specifically address this limitation.

Dredging alters the topography and overlying hydrodynamics of a shallow water area creating instability in the surrounding sediments, and increased accretion of fine sediments in the dredged area. The adverse impacts from a dredging activity may extend beyond the edge of the dredging foot print as erosion or slumping occurs in the adjacent areas and substrate material is relocated to the dredged area. The sediments in Bucks Harbor are predominately fine grained and consist mostly of mud and silt (Section 3.1.2), which are more likely to erode and slump after a dredging activity than coarser sediments.

As noted in the EFH assessment included in the EA (Section 3.1.4.4), eelgrass beds are documented to occur north of the project area. In addition, Attachment F to the EA indicates that a dive survey performed in 2004 observed eelgrass adjacent to the northwestern portion of the study area. Although the proposed project was configured to avoid these eelgrass beds and no submerged aquatic vegetation (SAV) beds are located within the dredging area (Section 3.1.4.4 and Section 4.4), NMFS believes that these

resources could be adversely impacted due to the proximity of the dredging activity. An appropriate buffer zone between the dredging activity and SAV beds would minimize adverse impacts related to turbidity created during dredging activities, and changes in sediment stability at the edge of the dredged area due to slumping of fine sediments.

Essential Fish Habitat Conservation Recommendations
NMFS recommends pursuant to Section 305(b)(4)(A) of the MSA that the ACOE adopt the following EFH conservation recommendations:

1. No in-water work should be undertaken between February 16 and November 7 of any year in order to avoid disturbing migratory patterns of Atlantic salmon, and adversely impacting winter flounder spawning and early development.

2. The dredging activity related to the turning basin should be designed so that the top of the dredged slope does not extend shallower than - 4 MLW in order to minimize adverse impacts on intertidal resources observed in the inner harbor area.

3. The top of the dredged slope for any portion of the dredging project should be at least 100 feet from the edge of any mapped or observed SAV beds in order to minimize adverse impacts due to turbidity during dredge activity, or changes in sediment stability at the edge of the dredged area due to slumping and deposition of fine sediments.

4. Anchoring of vessels should be prohibited in SAV beds.

Please note that Section 305(b)(4)(B) of the MSA requires the ACOE to provide NMFS with a detailed written response to these EFH conservation recommendations, including a description of measures adopted by the ACOE for avoiding, mitigating, or offsetting the impact of the project on EFH. In the case of a response that is inconsistent with NMFS' recommendations, Section 305(b)(4)(B) of the MSA also indicates that the ACOE must explain its reasons for not following the recommendations. Included in such reasoning would be the scientific justification for any disagreements with NMFS over the anticipated effects of the proposed action and the measures needed to avoid, minimize, mitigate, or offset such effects pursuant to 50 CFR 600.920(k).

Please also note that a distinct and further EFH consultation must be reinitiated pursuant to 50 CFR 600.920(l) if new information becomes available or the project is revised in such a manner that affects the basis for the above EFH conservation recommendations.

Conclusions

In summary, NMFS recommends that the ACOE not undertake any in-water work during the period between February 16 and November 7 of any year to avoid disturbing the migration of Atlantic salmon and the spawning of winter flounder. In order to minimize impacts related to SAV beds and mussel beds, dredging activity related to the turning

basin should be limited to a depth of -4 MLW, and a buffer zone of 100 feet between any SAV bed and any dredging activity should be implemented. In addition, the ACOE should ensure that anchoring of vessels is prohibited in SAV beds.

Please note that Endangered Species Act (ESA) Section 7 consultation requirements will be addressed under a separate letter. For any questions regarding ESA issues, please contact Jeff Murphy at 207-866-7379.

NMFS appreciates the opportunity to review and provide comments on this project. If you have any questions about this letter, please contact Marcy Scott at 978-281-9108, or email Marcy.Scott@noaa.gov .

Sincerely,

Peter D. Colosi
Assistant Regional Administrator
for Habitat Conservation

CC:
Mary Colligan, PRD, F/NER3
Jeff Murphy, PRD, NMFS Field Office, Orono, ME
Wende Mahaney, USFWS, Oldtown, ME
Mel Cote, EPA, Boston, MA
Todd Randall, ACOE, Concord, MA
Christopher Hatfield, ACOE, Concord, MA

DEPARTMENT OF THE ARMY
NEW ENGLAND DISTRICT, CORPS OF ENGINEERS
696 VIRGINIA ROAD
CONCORD, MASSACHUSETTS 01742-2751

REPLY TO:
ATTENTION OF:

October 22, 2008

Engineering/Planning Division
Planning Branch

Mr. Peter Colosi
National Marine Fisheries Service
One Blackburn Drive
Gloucester, Massachusetts 01930

Dear Mr. Colosi:

This letter is in regard to the US Army Corps of Engineers (Corps) proposed Section 107 navigation improvement and maintenance project in Bucks Harbor, Machiasport, Maine. This is a follow up letter to National Marine Fisheries Service's (NMFS) correspondence of April 14, 2008, in which NMFS provided initial Essential Fish Habitat (EFH) recommendations for the project and to recent conversation between Mr. Todd Randall of the Corps and Ms. Marcy Scott of your office.

The EFH recommendations for the Buck's Harbor project provided to the Corps include:

1. No dredging or disposal activities occurring in the project area between February 16, and November 7, of any year to minimize impacts to larval and juvenile winter flounder and juvenile Atlantic salmon;
2. Construct the turning basin so that the top of the dredge slope does not extend shallower than – 4' mean lower low water (MLLW) to minimize impacts to intertidal resources in the inner harbor;
3. Maintain a 100' buffer between the top of the slope of any portion of the project and existing eelgrass beds for sediment stability; and
4. Do not allow vessels to anchor in the eelgrass beds.

The Corps does not concur with the length of the time of year restriction in the first EFH recommendation. The Corps has agreed with NMFS-Protected Resources Division to utilize a November 8 through April 9 construction window to avoid impacts to Atlantic salmon. However, the use of a February 16 date as the end of the construction period is not supported by the Corps. As noted in your letter, conflicting information was presented in the EFH Assessment portion of the Environmental Assessment (EA) that was sent to you for review. Throughout the EA, a construction window of November through April was stated, yet a sentence in the winter flounder EFH Assessment paragraph (section 4.7 paragraph 7) erroneously stated that no dredging would occur between February and July. The correct language for the sentence that contains the reference to a time of restriction should read: "Minimal amounts of winter flounder

eggs and larvae may be impacted during construction, however, impacts to these life stages will be short-term and localized and no more than minimal impacts are anticipated." Therefore, the Corps requests that NMFS reconsider its recommendation and concur that dredging activities through April 9, would not significantly impact winter flounder and winter flounder EFH.

In regard to the second EFH recommendation (constructing the turning basin so that the top of the dredge slope does not extend shallower than – 4 feet mean lower low water MLLW to minimize impacts to intertidal resources in the inner harbor), the Corps believes the design for the turning basin as proposed will not affect intertidal habitats. The turning basin has been designed to allow vessels to access existing pier structures, while minimizing the quantity of material needed to be dredged or blasted from the area. This design includes the dredging of some areas as shallow as -3.0' MLLW. A buffer of approximately 75' will exist between intertidal areas and the top of slope of the proposed turning basin. The Corps feels this buffer zone is adequate to protect intertidal habitat and should not alter the structure of the adjacent intertidal flats. Therefore, the Corp can not accommodate this second EFH recommendation.

The third EFH recommendation calls for a 100' buffer between the top of the slope of any portion of the project and existing eelgrass beds to protect sediment stability. The Corps agrees that appropriate buffers should exist between proposed dredged areas and eelgrass beds. As such, a 50' buffer between the top of slope and existing eelgrass beds was incorporated into the project design. Enclosure 1 contains a figure of the existing eelgrass beds defined during the study, the limits of the project area (including side slopes), and the buffer zone the Corps designed around the existing eelgrass resources. The Corps believes a 50' buffer will be large enough to avoid any impacts to eelgrass from sediment slumping following dredge activities. Additionally, the project has been designed to avoid areas of ledge in the harbor. The incorporation of a 100' buffer in the project design near all eelgrass would shift the alignment of the project into areas with ledge which would substantially increase project costs and require blasting efforts. Therefore, the Corp can not accommodate the EFH recommendation of a 100' buffer.

The Corps agrees with the fourth EFH recommendations and will not allow anchorage in the eelgrass areas during construction. The Corps will also advise the town of Machiasport that they should demarcated the resource area following construction of the project.

If you have any questions concerning this response, please contact the project manager, Mr. Christopher Hatfield, at (978) 318-8520, or the project ecologist, Mr. Todd Randall, at (978) 318-8518.

Sincerely,

John R. Kennelly
Chief of Planning

Enclosure

Copy Furnished:

Ms. Wende Mahaney, USFWS
U.S. Fish and Wildlife Services
1168 Main Street
Old Town, Maine 04468

Ms. Marcy Scott, NMFS
National Marine Fisheries Service
One Blackburn Drive
Gloucester, Massachusetts 01930

Ms. Mary Colligan, NMFS
National Marine Fisheries Service
One Blackburn Drive
Gloucester, Massachusetts 01930

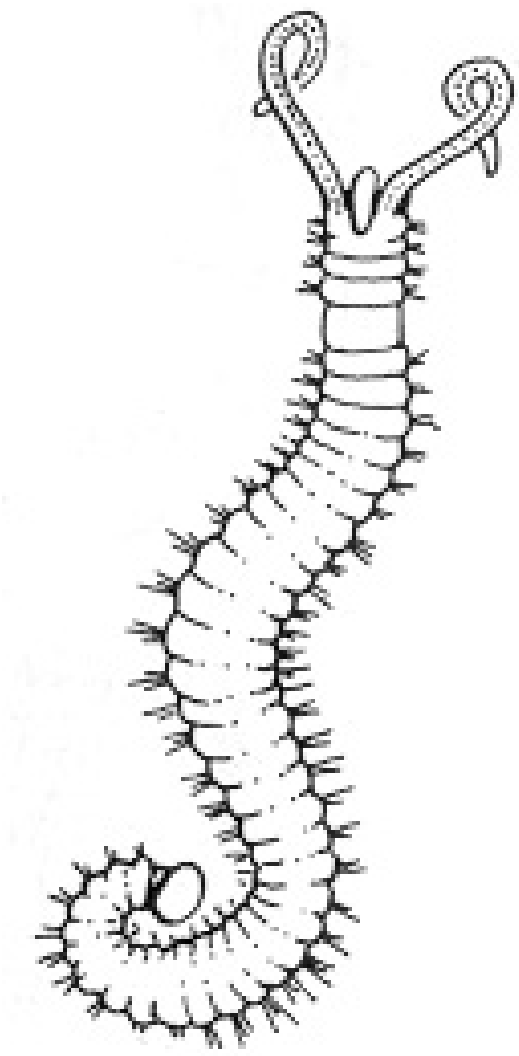
Mr. Jeff Murphy, NMFS
National Marine Fisheries Service
Maine Fish Office
17 Godfrey Drive
Orono, Maine 04473

EA - APPENDIX D

BENTHIC SURVEY

MACROBENTHIC SURVEY OF BUCK'S HARBOR (MACHIASPORT,MAINE)

September, 2002



Prepared By:

Peter E. Pellegrino, Ph. D.
Coastal Resource Analysts
Waterford, CT 06385

I. Introduction

Benthic infaunal communities are composed of a variety of small organisms including worms, clams, snails, and crustaceans. The major ecological functions of the benthos include the production of biomass as food resources for higher trophic levels and the bioturbating (mixing) of sand and mud.

Benthic organisms are very sensitive to habitat disturbances, including organic enrichment and contamination of sediments by toxic substances. Benthic communities can therefore provide a useful environmental monitoring tool to evaluate estuarine systems.

II. Objectives

The objective of this study was to document the benthic community structure of the Buck's Harbor Federal navigation project and proposed expansion areas.

III. Methods

A total of nine (9) stations were sampled (Figure 1). Benthic samples were taken using a standard 0.04 m^2 VanVeen grab with one replicate taken at each station. Sediment samples were washed through a 0.5 mm mesh screen, stained with a biological dye (rose bengal) and fixed in 10% buffered formalin. Specimens were then transferred and stored in 70% ethanol. All organisms were identified to the lowest possible taxonomic category and counted. All benthic samples were collected on September 5, 2002.

IV. Results

The benthic structure of the nine sampling stations is summarized in Table 1. A total of 43 species were reported from the nine stations. Based on the analysis of a single replicate from each station, it is apparent that the community is dominated by a typical assemblage of opportunistic and transitional stage benthic species.

Polychaetes and Oligochaetes were the dominant taxonomic groups in the project area. The dominant polychaete species were the spionid, *Polydora cornuta*; the Cirratulid, *Cirratulus sp.*; and the nephtid, *Nephtys incisa*.

Station Summary

Station #1

A total of 13 species was reported from station #1 represented by 193 individuals. The sediment type was silty sand and shell hash. Polychaetes and Oligochaetes dominated Station #1. Station 1 was adjacent to a mussel bed and had eelgrass (Zostera marina) growing near.

Station #2

A total of 17 species was reported from station #2 represented by 337 individuals. The sediment type was brown silty-sand. Polychaetes and Oligochaets were again the dominant taxonomic group. The dominant species was an unidentified Oligochaete.

Station #3

A total of 11 species was reported from station #3 represented by 972 individuals. The sediment type was silt. Polychaetes were dominant. The dominant benthic species were Oligochaetes and the Cirratulid, *Cirratulus sp.*

Station #4

A total of 15 species was reported from station #4 represented by 566 individuals. The sediment type was sandy silt. Polychaetes and Oligochaetes again the dominated the assemblage. The dominant species was an unidentified Oligochaete.

Station #5

A total of 13 species was reported from station #4 represented by 431 individuals. The sediment type was sandy silt. Polychaetes and Oligochaetes again the dominated the assemblage. The dominant species was an unidentified Oligochaete.

Station #6

A total of 16 species was reported from station #6 represented by 1082 individuals. The sediment type was sandy silt. Polychaetes were dominant. The dominant species were *Cirratulus* sp., *Polydora cornuta*, and an unidentified Oligochaete.

Station #7

A total of 20 species was reported from station #7 represented by 637 individuals. The sediment type was sand. Polychaetes were dominant. The dominant species were *Polydora cornuta* and an unidentified Oligochaete.

Station #8

A total of 17 species was reported from station #8 represented by 478 individuals. The sediment type was sand. Polychaetes were dominant. The dominant species were *Cirratulus* sp., *Polydora cornuta*, and an unidentified Oligochaete.

Station #9

A total of 25 species was reported from station #9 represented by 686 individuals. The sediment type was sandy silt. Polychaetes were dominant. The dominant species were *Aricidea catherinae* and *Aricidea suecia.*

Table 1. Benthic Community Structure of Buck's Harbor (Machiasport, Maine). Samples per 0.04 m2. Samples collected September, 5 2002.

	1	2	3	4	5	6	7	8	9
Species									
ANNELIDA									
POLYCHAETEA									
					-				
Eteone longa	6	5	-	-	-	-	2	-	-
Eteone lactea	-	2	-	-		-	1	-	2
Phyllodoce areena	3	5	-	24	15	17	14	7	2
Nephtys incisa	6	9	94	53	35	25	146	25	57
Polydora cornuta	55	58	135	126	100	183	67	120	32
Ammotrypane aulogaster	15	19	5	12	1	9	-	5	-
Ampharete arcutifrons	6	-	2	-	-	10	7	2	3
Ampharete arctica	-	-	-	-	-	-	9	-	4
Scoletoma tenuis	15	35	-	-	-	3	-	9	-
Harmothoe imbricata	6	4	-	-	-	-	-	1	-
Harmothoe extenuata	2	-	-	-	-	-	-	-	-
Leitoscolplos robustus	-	-	24	29	21	41	44	19	101
Leitoscoloplos sp.	2	-	-	-	-	-	-	-	-
Pherusa affinis	-	2	-	-	2	-	1	-	1
Aricidea catherinae	-	4	64	70	15	76	-	36	127
Aricidea suecica	-	-	-	-	-	-	-	3	24
Cirratu;us sp. A	-	21	469	-	51	393	141	48	11
Spernaspis fossor	-	-	2	-	-	3	-	-	-
Nereis sp A.	-	43	-	-	-	-	-	-	13
Nereis virens	-	-	-	2	1	-	-	1	-
Pygospio elegans	-	-	-	6	-	-	-	-	5
Polycirrus eximius	-	-	-	-	-	-	27	-	12
Cossura logocirrata	-	-	-	-	-	-	1	-	-
Thrayx acutis	-	-	-	-	-	-	5	1	6
Prionospio steenstrupi	-	-	-	-	-	-	-	-	3
Pholoe minuta	-	-	-	-	-	-	-	-	3
Mediomastus ambiseta	-	19	22	-	5	17	-	28	56
OLIGOCHAETES									
Olgo sp A	73	88	153	223	178	281	159	157	136
Nemertean									
Amphiporus sp A	-	-	-	2	-	-	-	-	2
PHORONIDS									
Phoronis architecta	-	-	-	3	-	1	-	-	61
MOLLUSCA									
GASTROPODA									
Littorina littorea	3	-	-	-	-	-	-	-	-
Acnea testudinalis	1	3	-	-	-	-	-	-	-
BIVALVIA									
Mya arenaria	-	4	-	-	-	-	-	-	-

ARTHROPODA									
AMPHIPODA									
Corophium volitater	-	16	-	-	-	-	-	-	-
Corophium connelli	-	-	-	2	1	-	-	-	-
Casco bigelowi	-	-	2	-	-	3	-	5	18
Photis reinhardi	-	-	-	10	5	19	3	11	3
Dulischia porrecta	-	-	-	-	-	-	1	-	1
Unciola cirrata	-	-	-	-	-	-	1	-	-
ISOPODA									
Edotea sp.	-	-	-	-	-	-	1	-	-
CUMACEAN									
Diastylis sculpta	-	-	-	3	-	1	5	-	3
MYSIDS									
Neomysis americana	-	-	-	1	1	-	-	-	-
Praunus flexuosus	-	-	-	-	-	-	2	-	-
TOTAL # OF INDIVIDUALS	**193**	**337**	**972**	**566**	**431**	**1082**	**637**	**478**	**686**
TOTAL NUMBER OF SPECIES	**13**	**17**	**11**	**15**	**13**	**16**	**20**	**17**	**25**

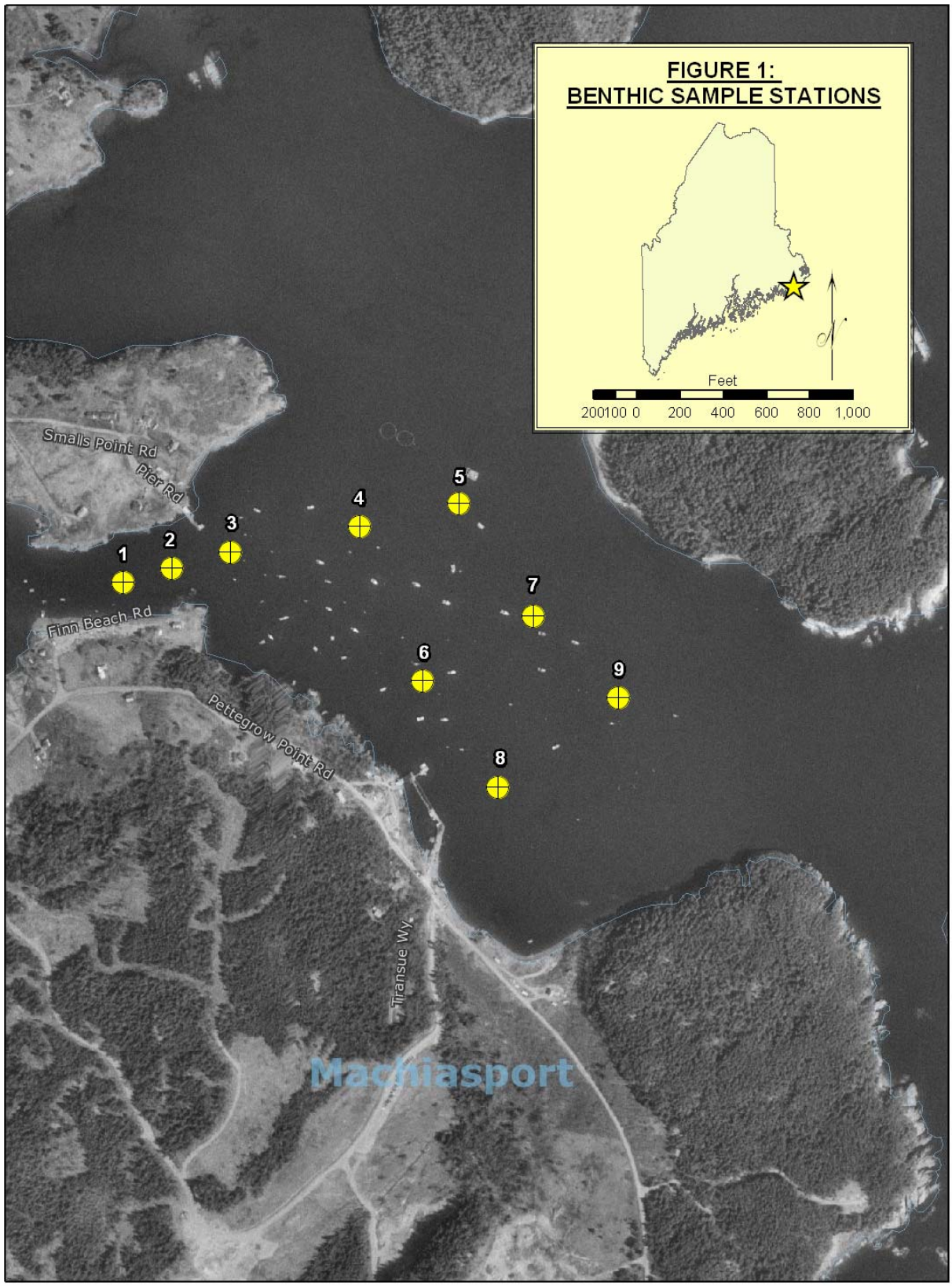


FIGURE 1:
BENTHIC SAMPLE STATIONS
Feet
200100 0 200 400 600 800 1,000
Smalls Point Rd
Pier Rd
Finn Beach Rd
Pettegrow Point Rd
Transue Wy
Machiasport
1
2
3
4
5
6
7
8
9

EA - APPENDIX E

EELGRASS SURVEY OF BUCK”S HARBOR

CENAE-EP-VE 25 October 2004

MEMORANDUM FOR THE RECORD

SUBJECT: Buck's Harbor Submerged Aquatic Vegetation Survey

1. **DATE OF SURVEY**: September 27-29, 2004

2. **LOCATION**: Buck's Harbor (Machiasport, ME)

3. **PARTICIPANTS**:

Todd Randall	USACE
Ben Loyd	USACE
Eric Nelson	USEPA
Phil Colarusso	USEPA
Erik Beck	USEPA

4. **REPORT**: The US Environmental Protection Agency (USEPA) dive team of Mr. Nelson, Mr. Colarusso, and Mr. Beck conducted a dive survey of Buck's Harbor Federal Navigation Project (FNP) and areas proposed for expansion of the FNP to identify and map submerged aquatic vegetation (SAV) resources. Mr. Randall and Mr. Loyd were onsite as US Army Corps of Engineers (USACE) representatives and documented the movement of the dive team.

On the morning of September 28th, Mr. Randall and Mr. Loyd set buoys at the corners of the Bucks Harbor project area to mark the area to be surveyed. Figure 1 shows the location of the buoys that were deployed. The project area included the existing Buck's Harbor FNP and the areas being considered for expansion under the Continuing Authorities Section 107 Program.

In the afternoon of September 28th, the USEPA dive team swam four transects (Transects A, X1A, X1B, and F) (Figure 1). Transect locations are noted on the map attached to this memo and transect coordinates are detailed in the attached table. No SAV was found along transects A, X1B, or F. Sediment at these transects was noted by Mr. Colarusso as "soft-silty mud". Some shell hash and drift algae were noted at these transects. SAV (specifically eelgrass - *Zostera marina*) was found in portion of Transect X1A. Mr. Colarusso noted that the eelgrass in this area was spread out in "patchy beds" and estimated bed dimensions of 6' x 2'. Mr. Colarusso also noted that flowering eelgrass plants were observed. GPS reading were taken over the observed eelgrass beds and distances of the extent of the beds were estimated.

On the morning of September 29th, the USEPA dive team swam four transects (C, D, E, and X). No SAV was found along transects C, D, or E. Sediment at these transects was noted by Mr. Nelson as "soft-silty mud". Macroalgae (mainly *Laminaria*) was observed at all transects in depressions in the bottom. Eelgrass was found along portions of transect X. The position of the patches were noted. Mr. Colarusso noted that the eelgrass along this transect was very patchy with the majority of the plants standing as single individual shoots. Small patches

(approximately 2' x 2') were observed at the center point of the transect. Sediment at transect X was described as "silty".

5. **IMPORTANCE**: The sediments in the study area were dominated by silts. No ledge was observed along any of the transects. Eelgrass (*Zostera marina*) was observed in the northwestern portion of the study area (transects X and X1A) (Figure 2). No eelgrass was reported in the remaining areas of the project.

Todd Randall 25 Oct 04

TODD RANDALL
Marine Ecologist
Environmental Resources Section
New England District

CF: Mr. Randall
Mr. Dunbar
Mr. Mackay
ED Files

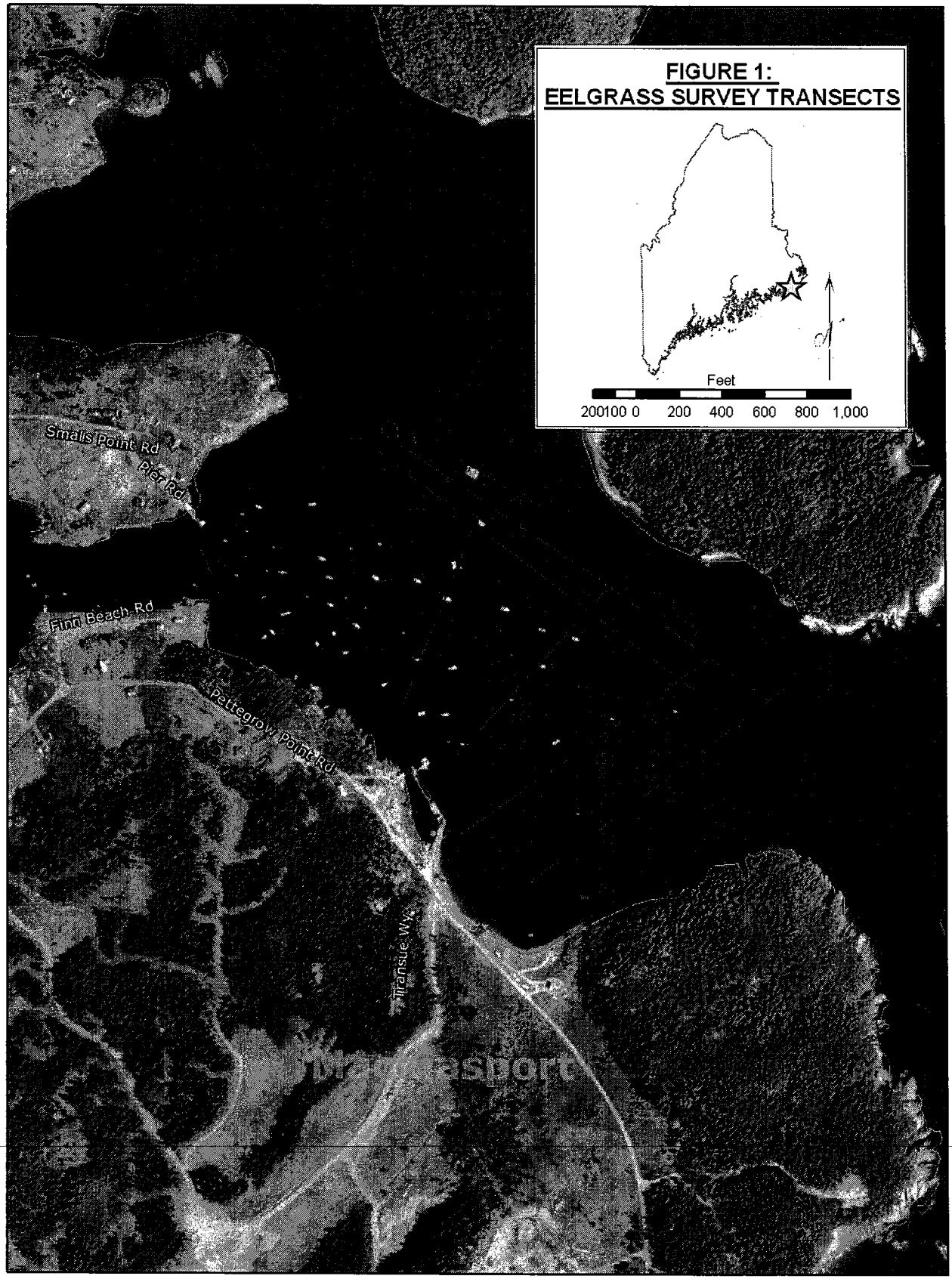


FIGURE 1:
EELGRASS SURVEY TRANSECTS
Feet
200100 0 200 400 600 800 1,000
Smalls Point Rd
Pier Rd
Flint Beach Rd
Pattegrow Point Rd
Treasure Wy

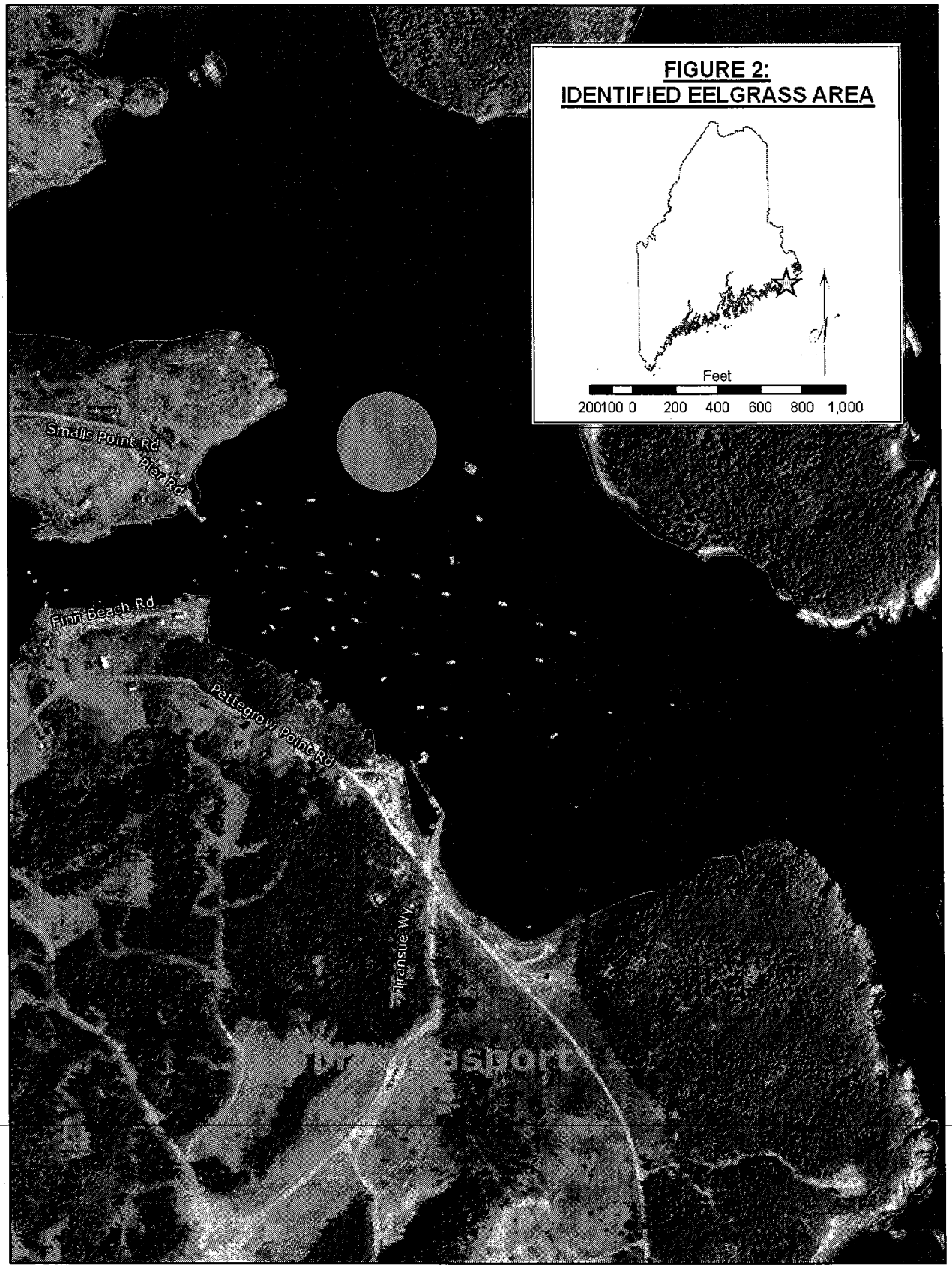


FIGURE 2:
IDENTIFIED EELGRASS AREA
Feet
200100 0 200 400 600 800 1,000
Smalls Point Rd
Pier Rd
Finn Beach Rd
Pettegrow Point Rd
Tranquil Wy